

# THE IRON AGE

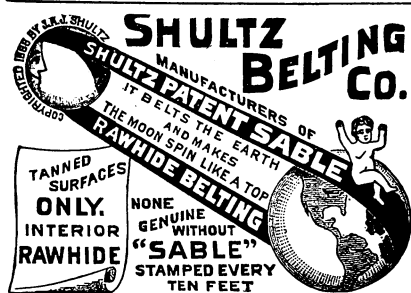
A Review of the Hardware, Iron and Metal Trades.

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Advertising and Subscription Rates " 303



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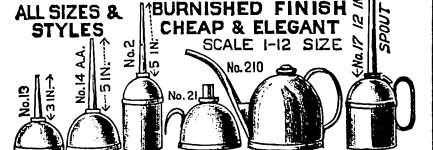
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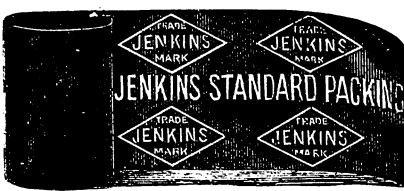
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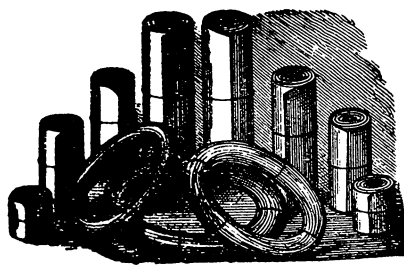
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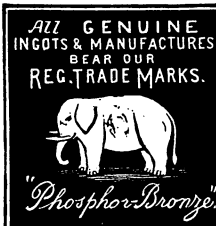
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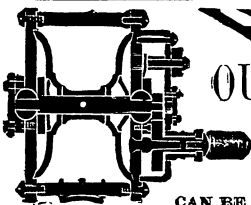
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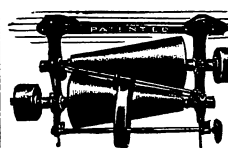
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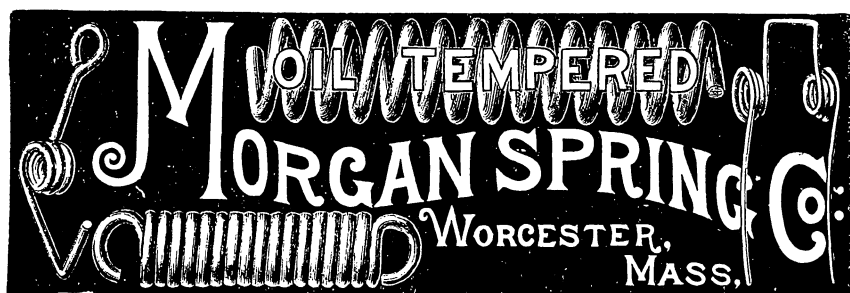


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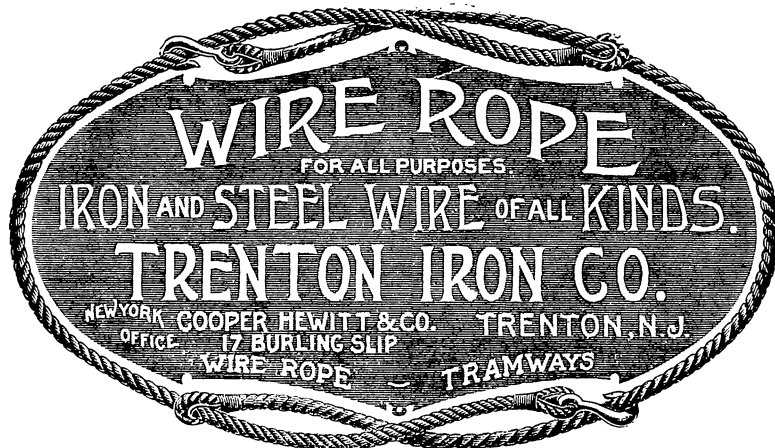
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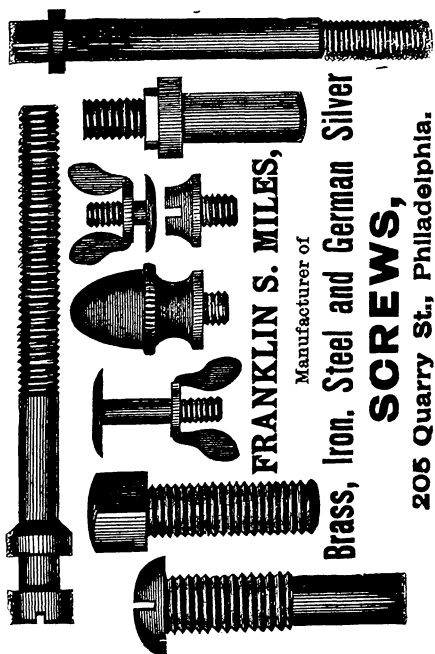
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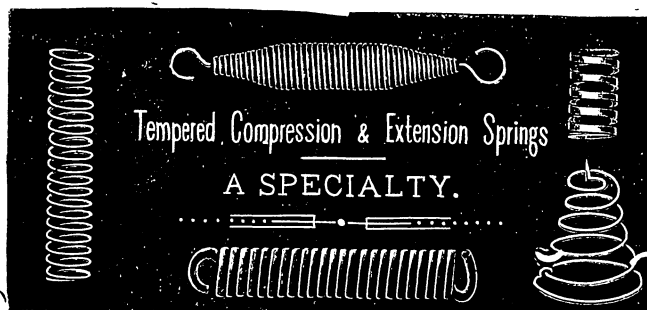
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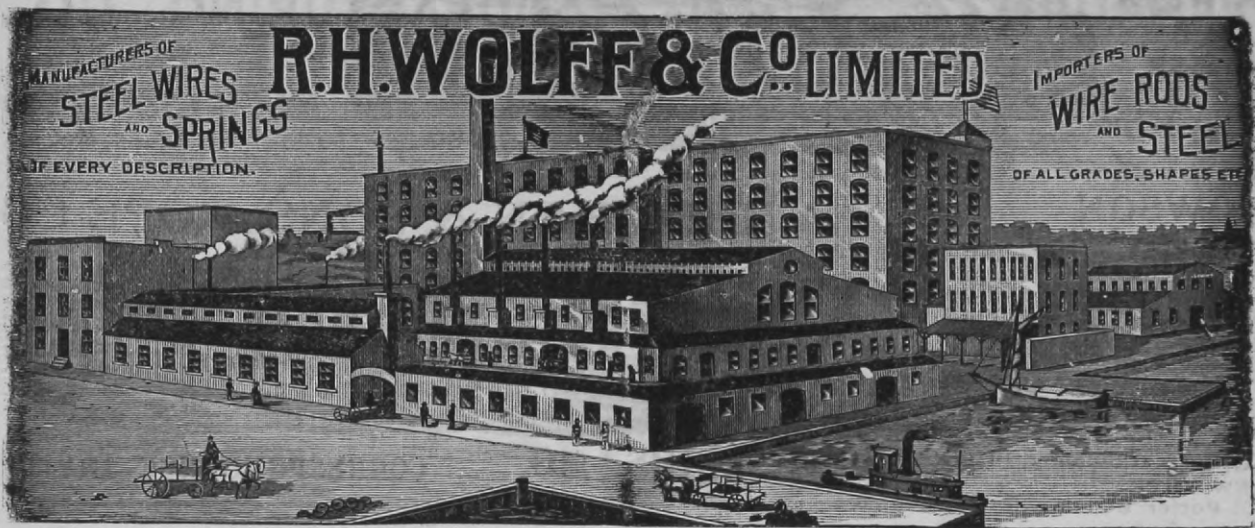
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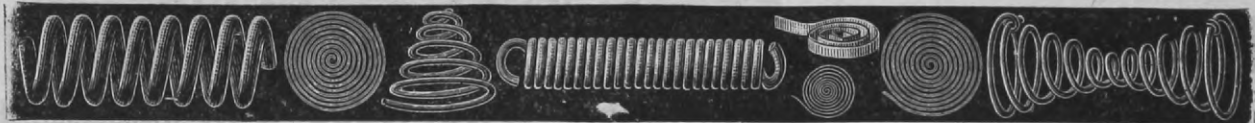
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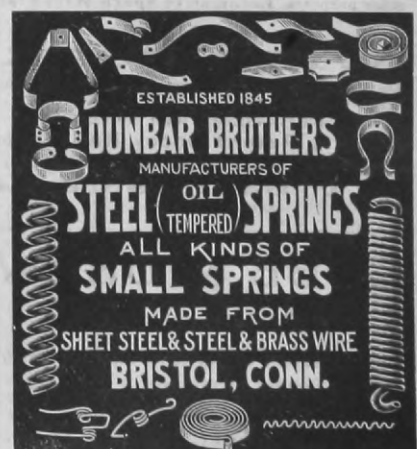
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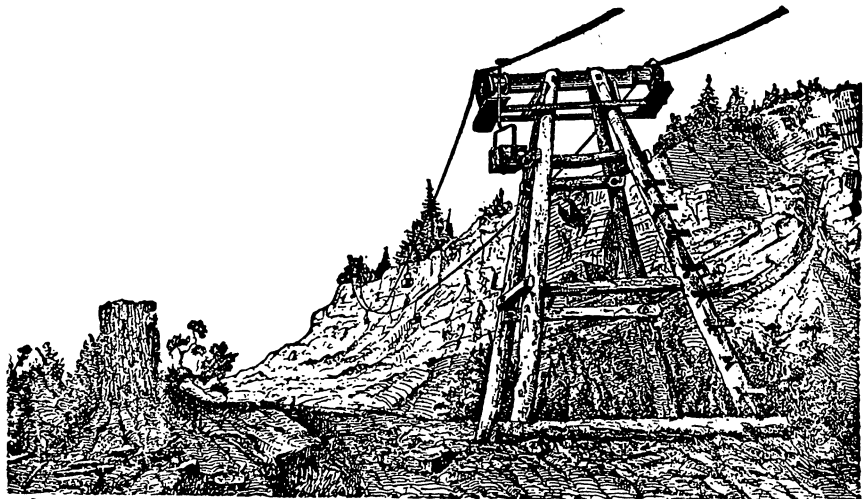
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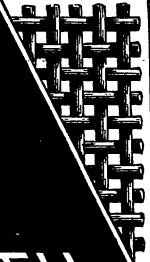
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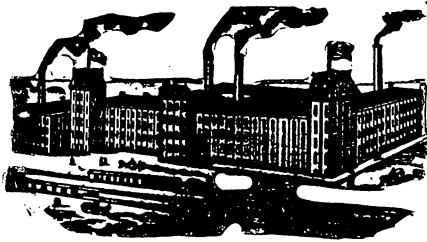
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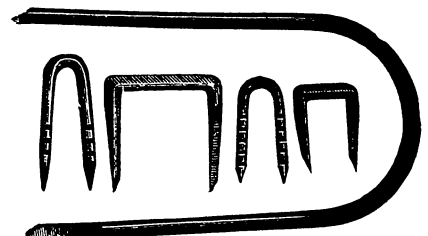
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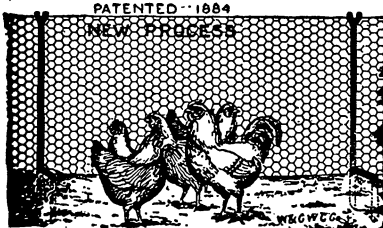
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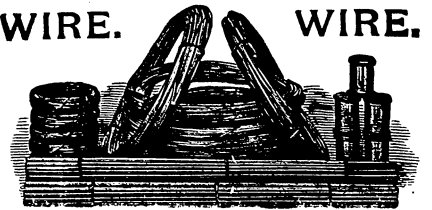
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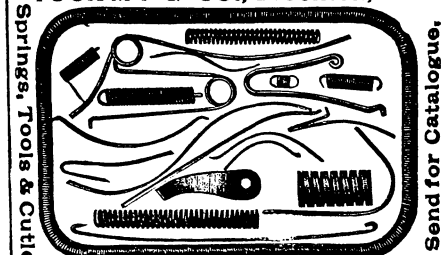
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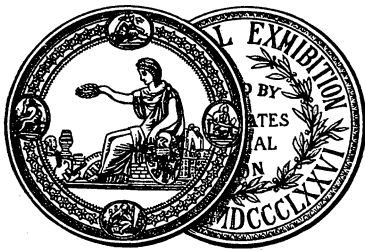
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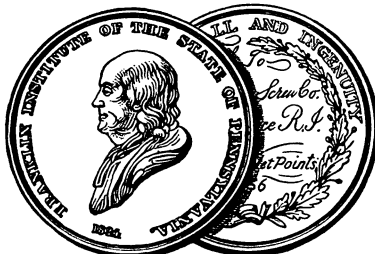
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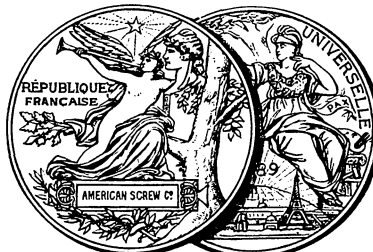
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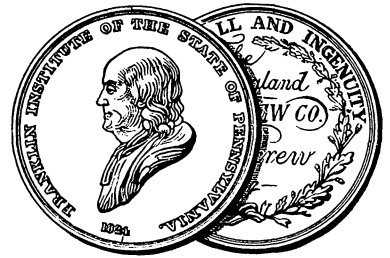
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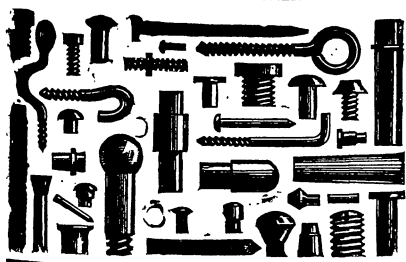
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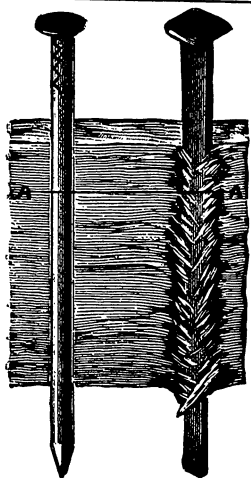
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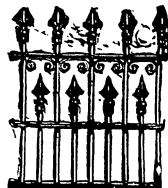
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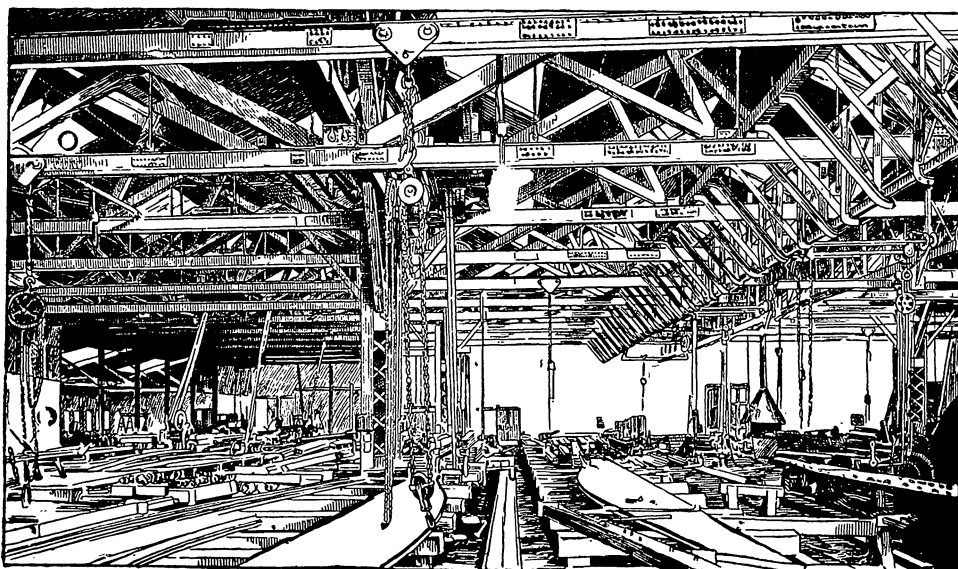
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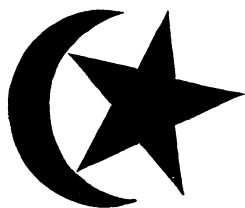
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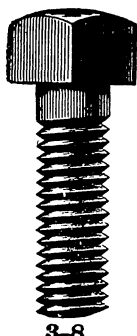
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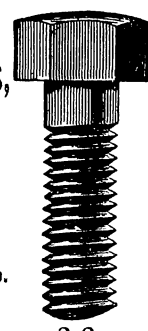
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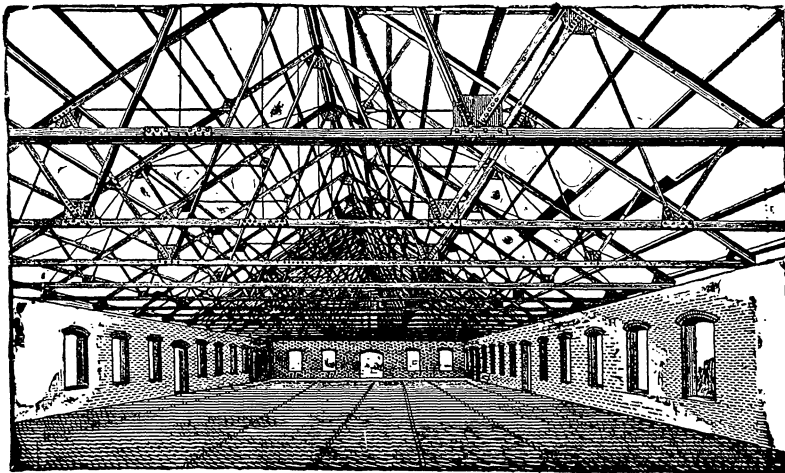
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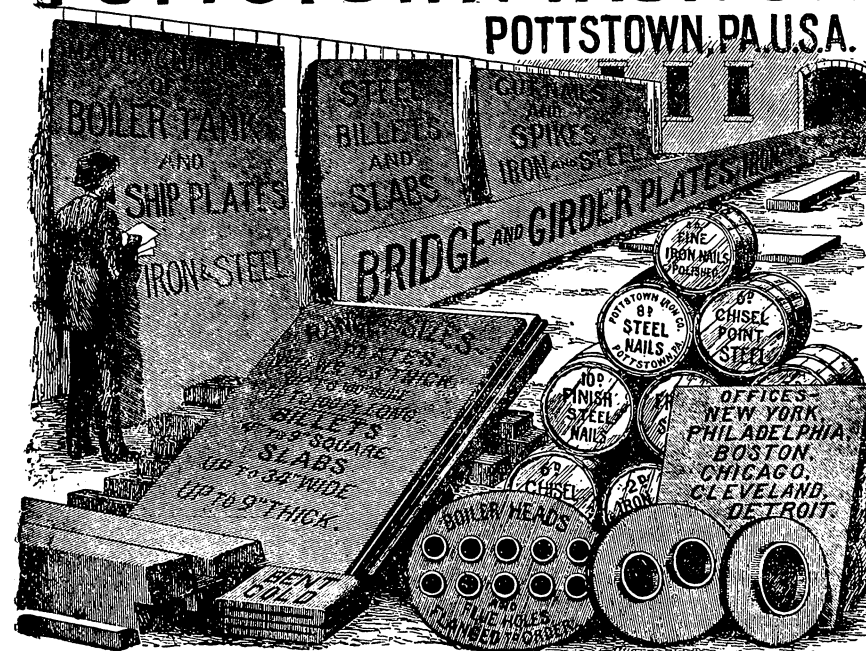
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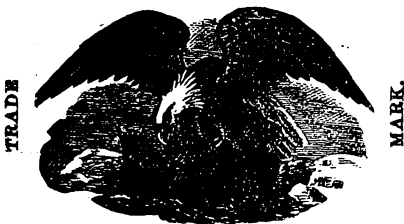
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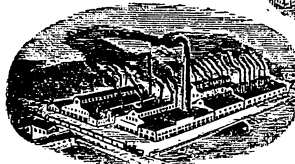
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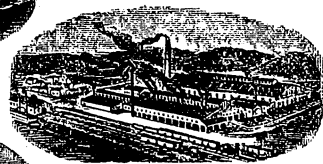
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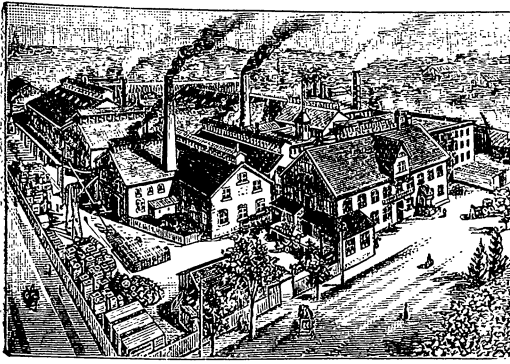
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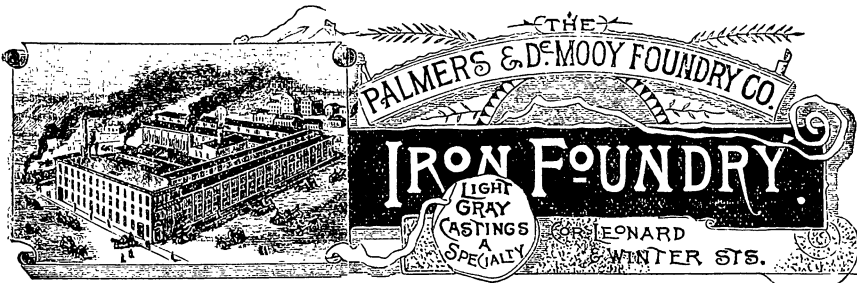
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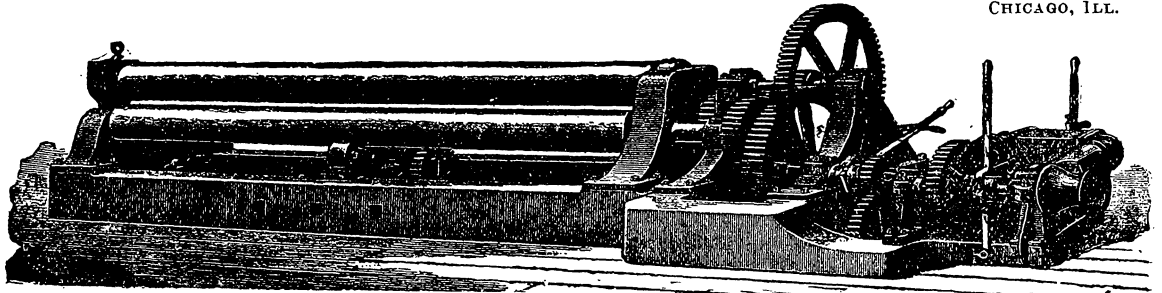
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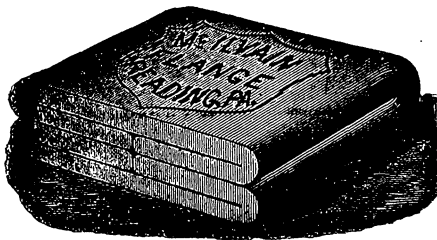
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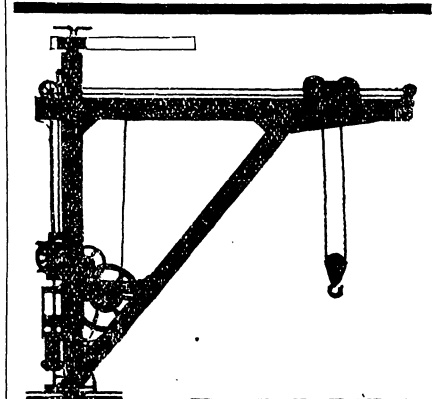
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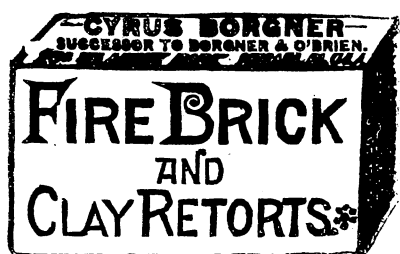
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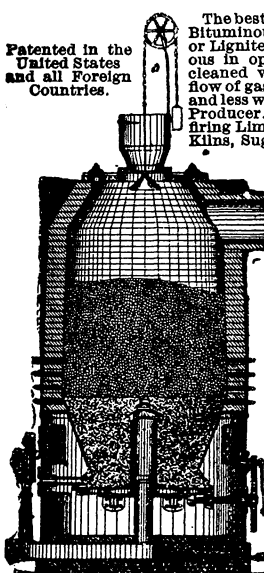


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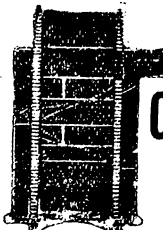
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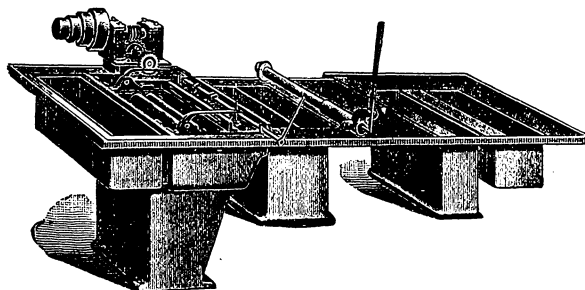
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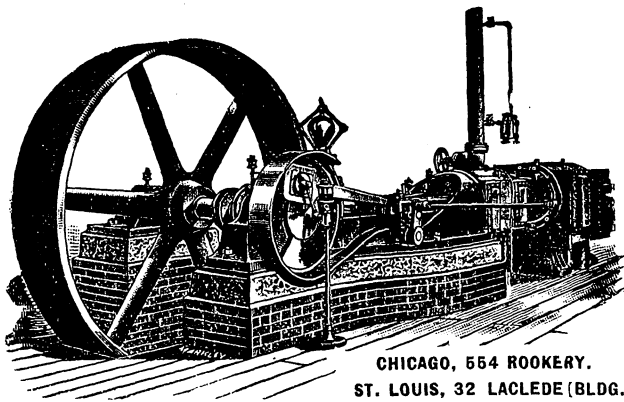
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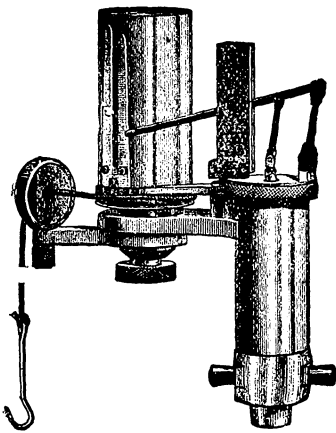
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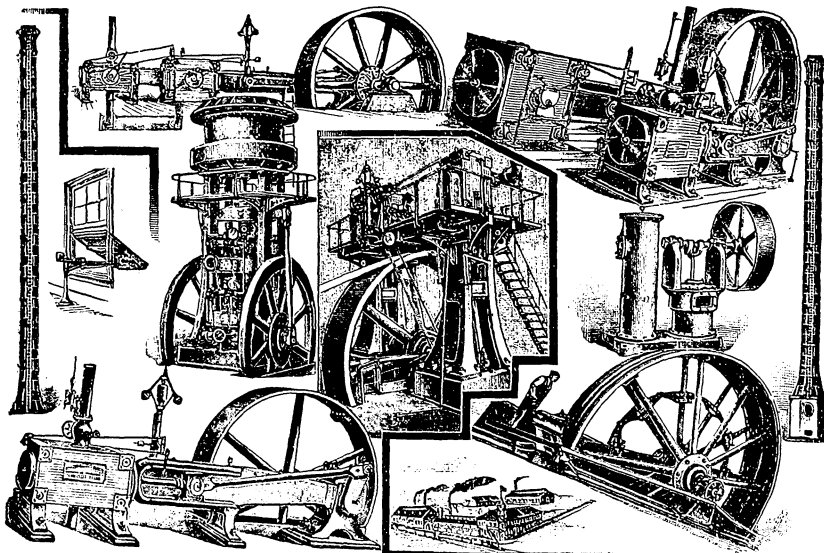
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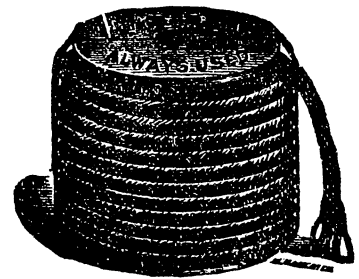
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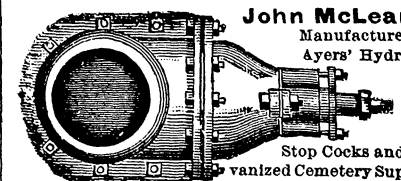
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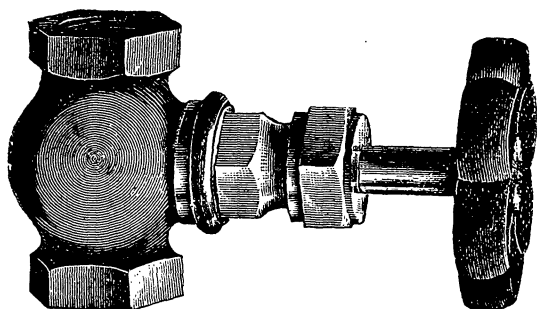
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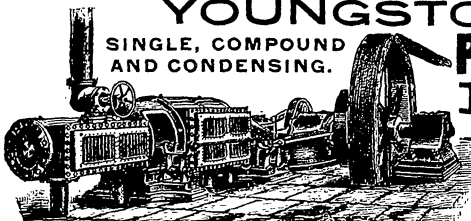
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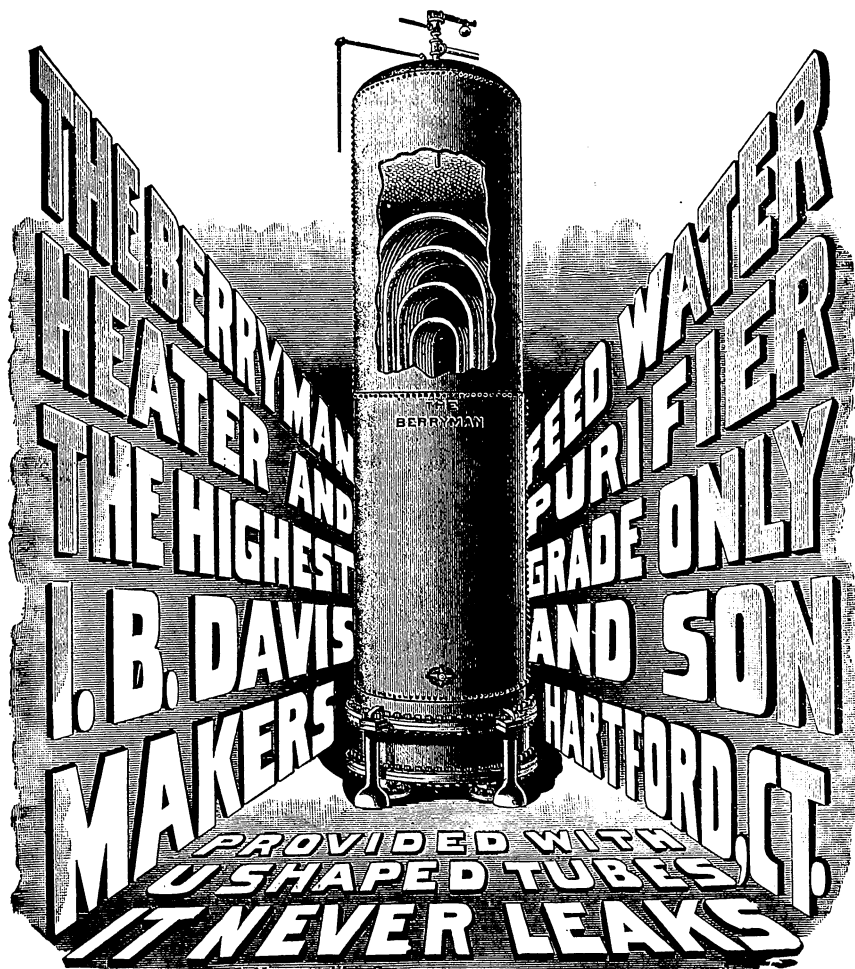
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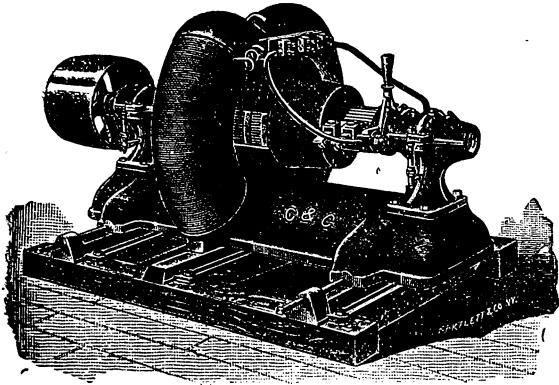
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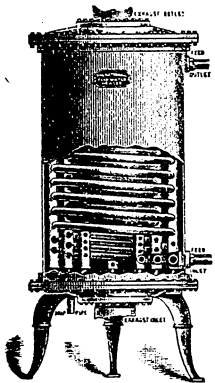
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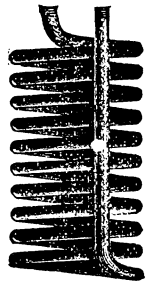


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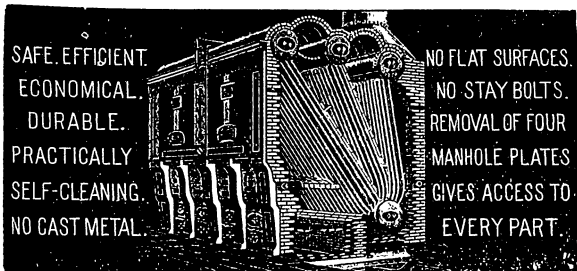
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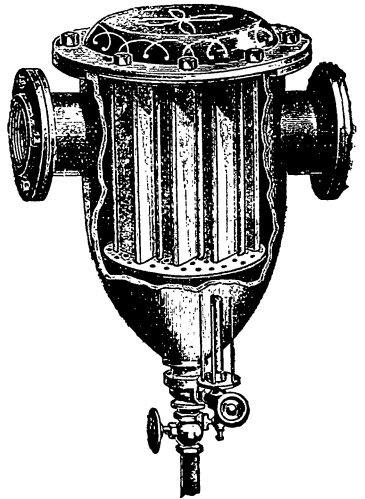
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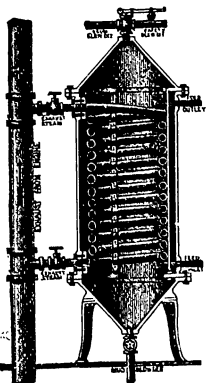
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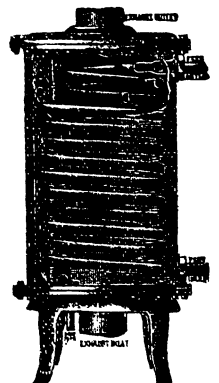
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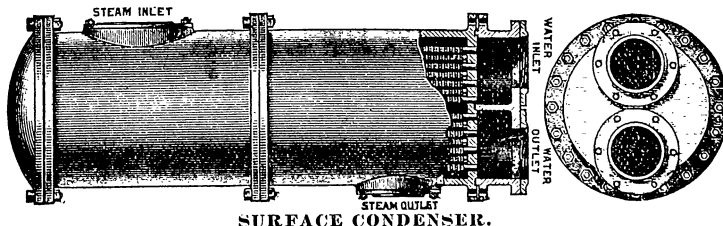
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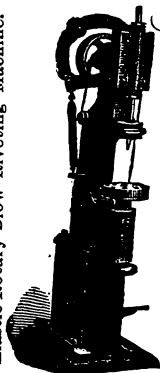
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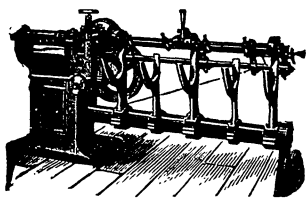
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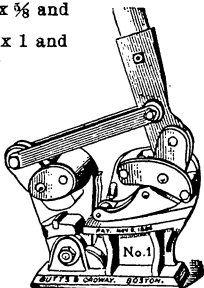
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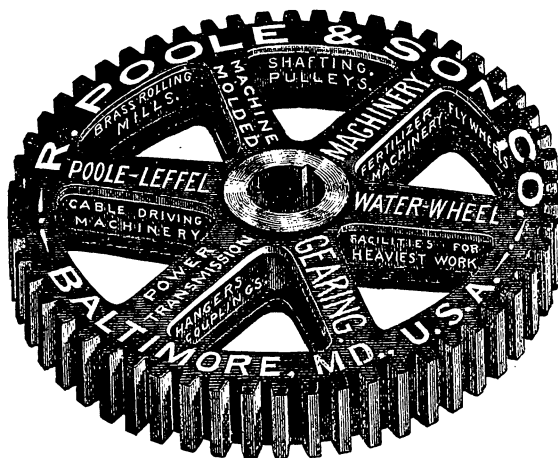
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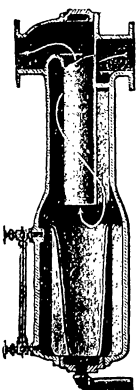
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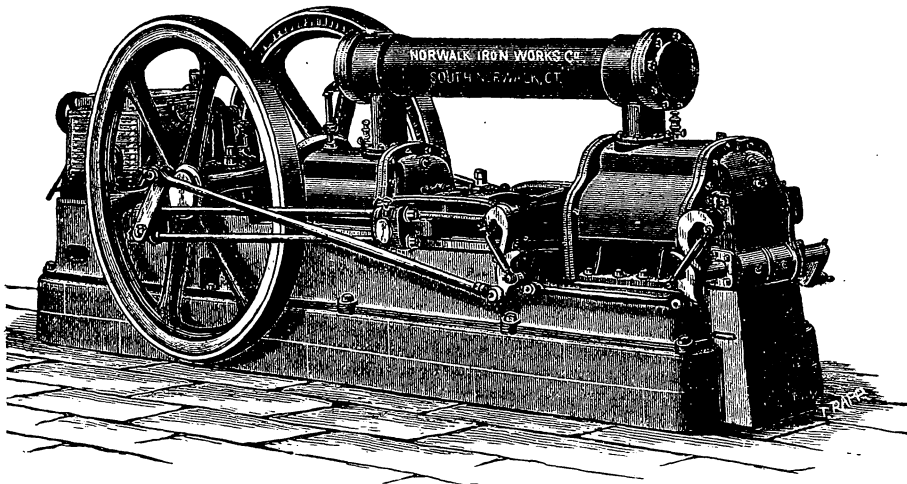
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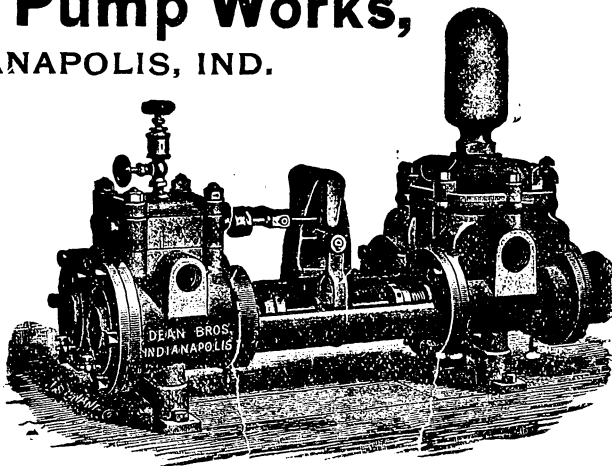
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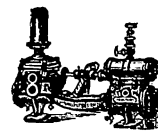
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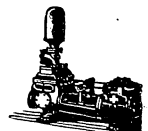
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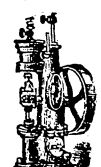
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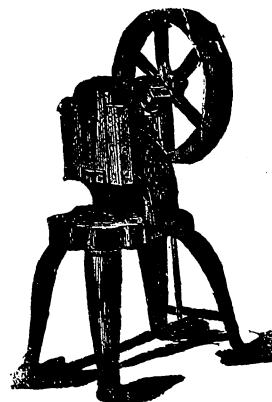
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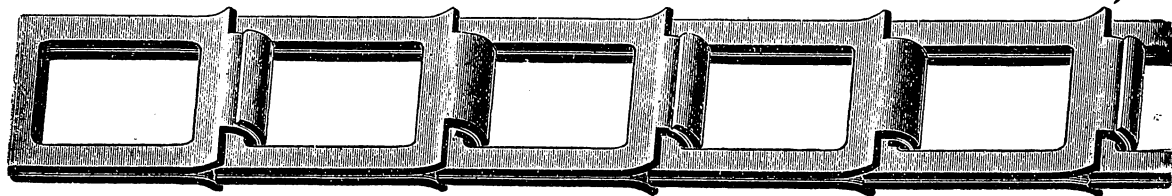
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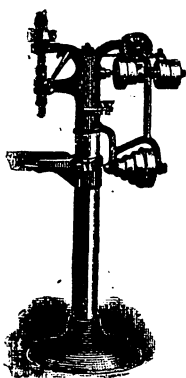
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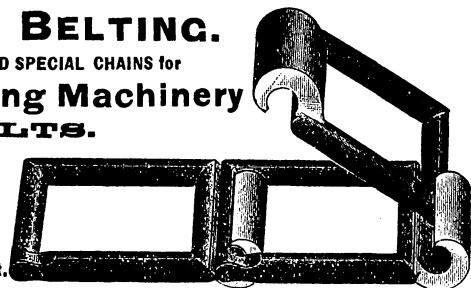
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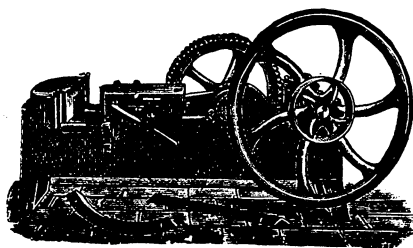
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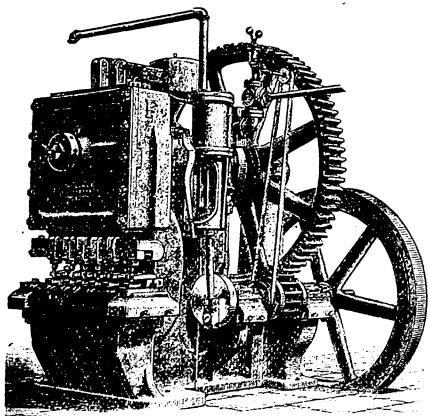
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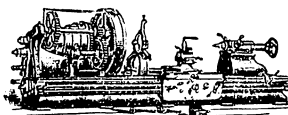
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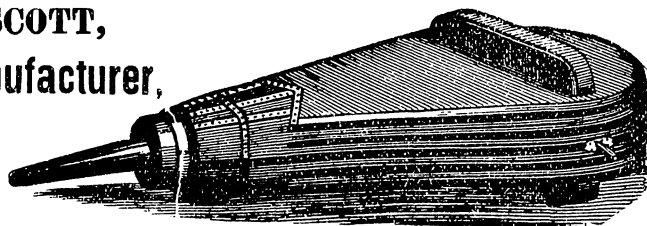
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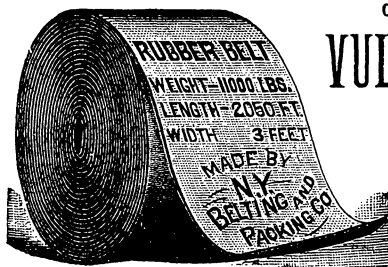
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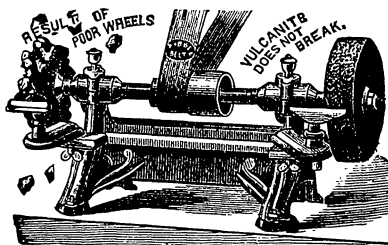


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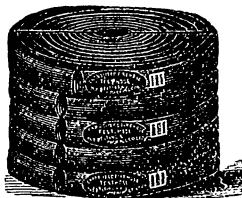
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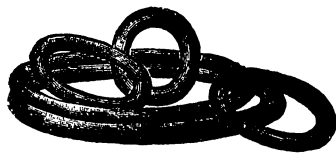
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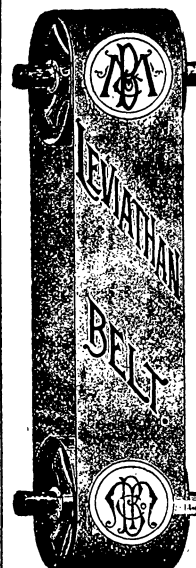
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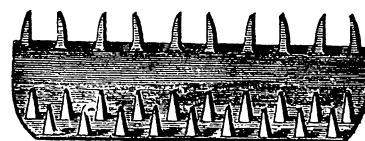
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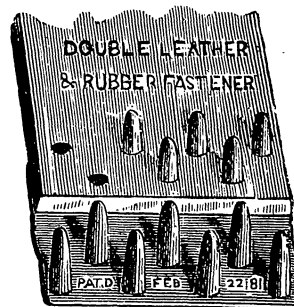


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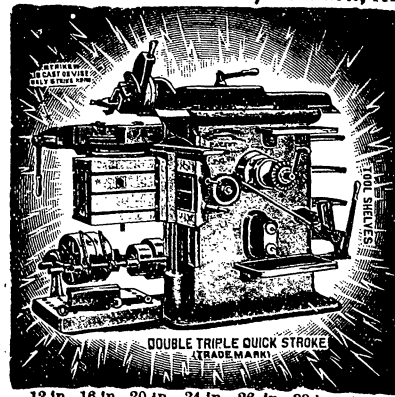


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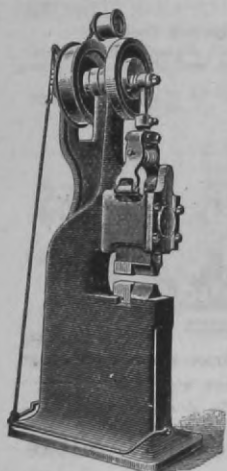
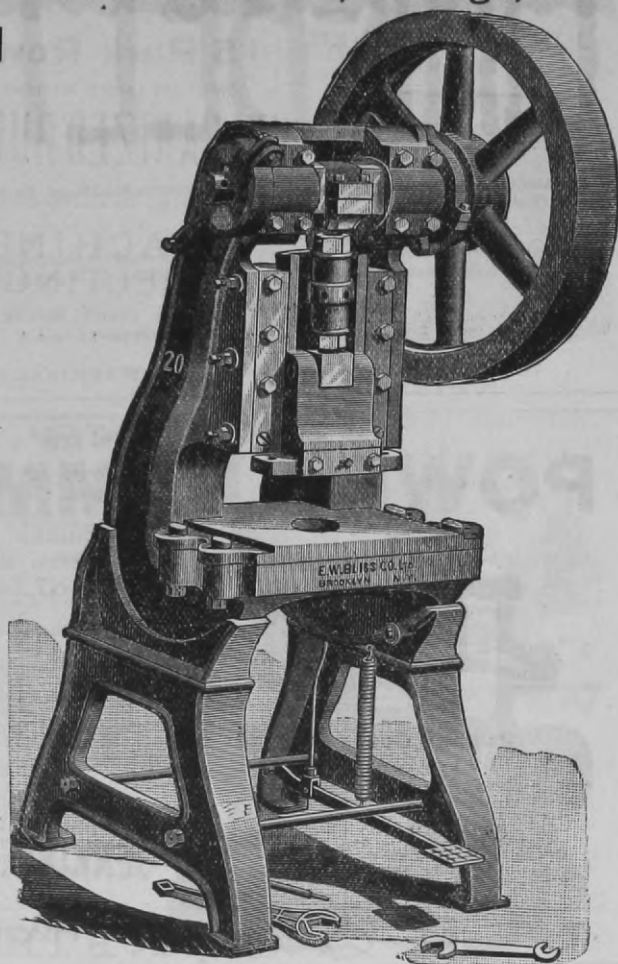
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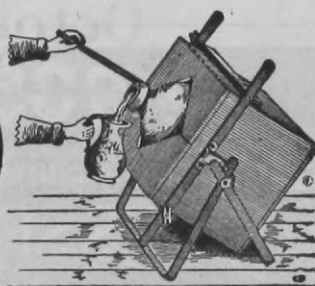
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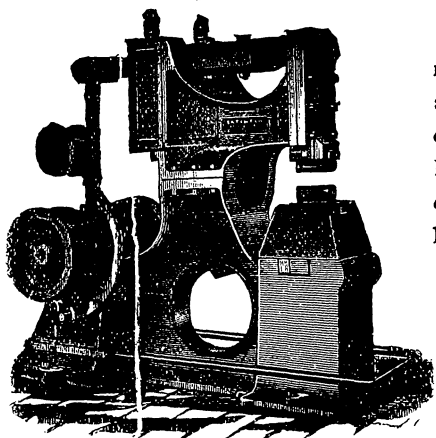
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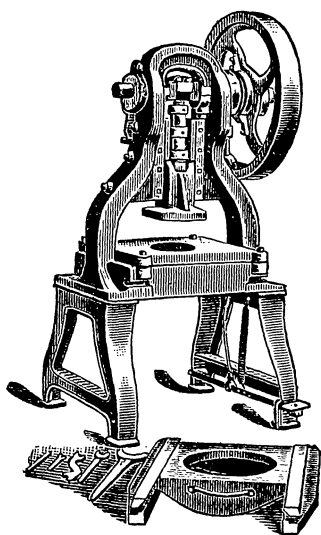
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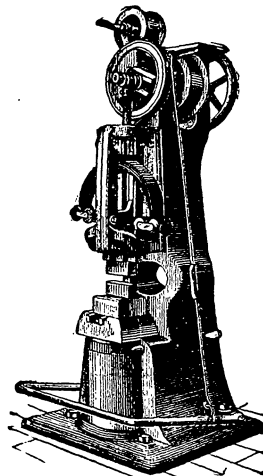
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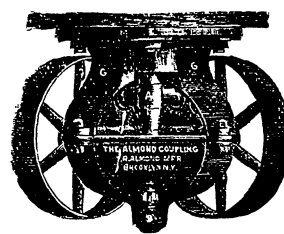
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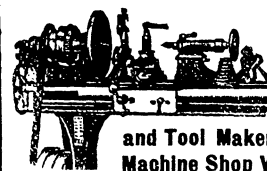


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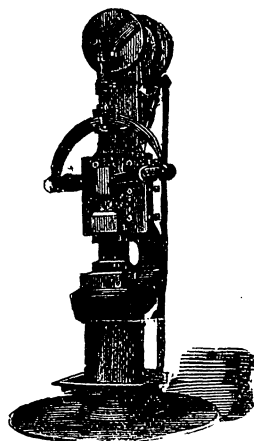
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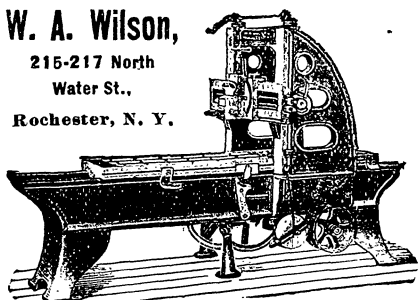
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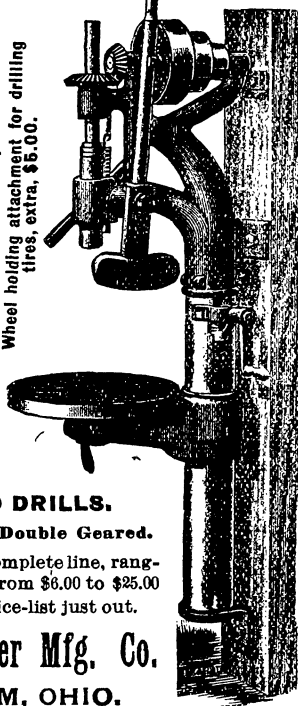
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FIG. 727.

Has OUT GEARS, and is a thoroughly first-class tool in all respects. Dia. Column, 4 1/2 in.; Dia. Spindle, 1 3/8 in.; and bored No. 2 Morse Taper; Vertical Travel, 6 in.; Drills to centre 18 in. circle.

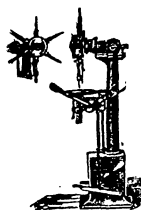
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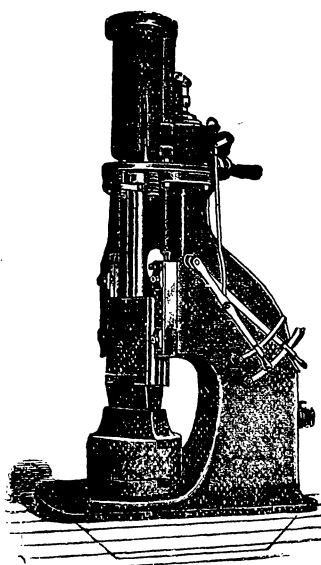
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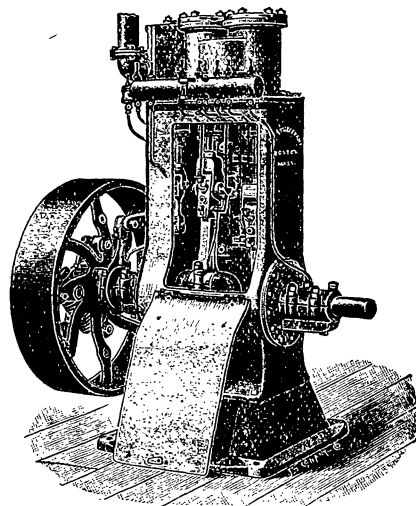
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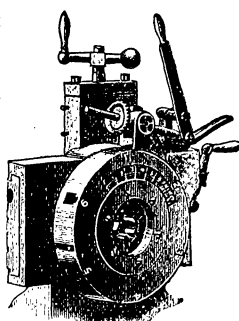
PLACE ON THEIR

PEERLESS AND DUPLEX

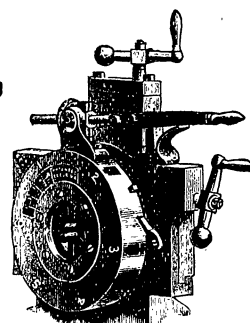
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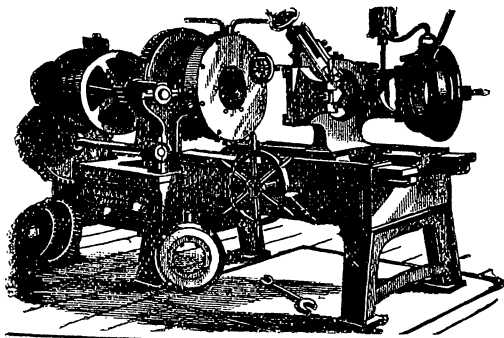
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For Pipe-Mill and Steam Fitters Use. Tapping Machines for Steam Fitting. Also Steam and Gas Fitters' Hand Tools.

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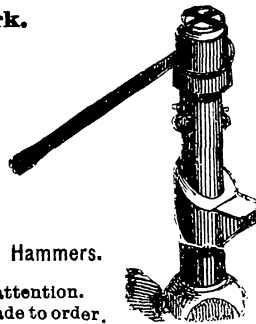
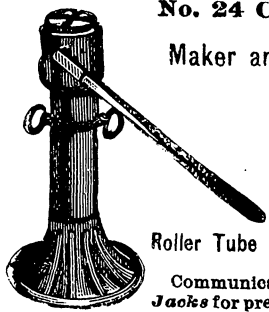
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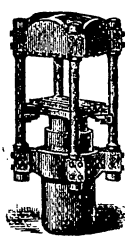
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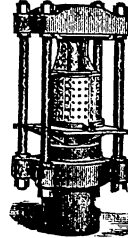
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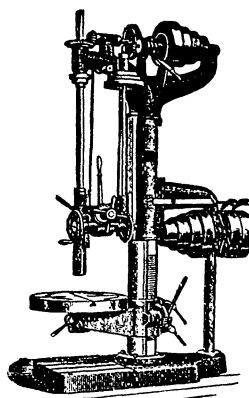
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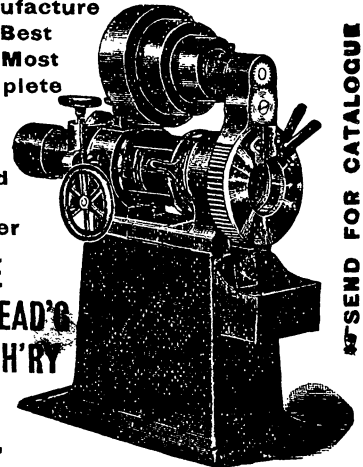
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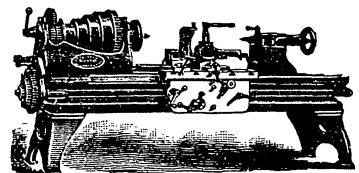
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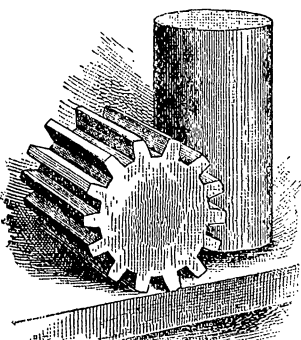
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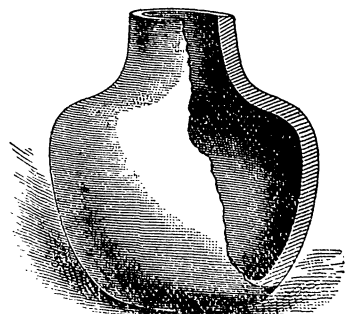
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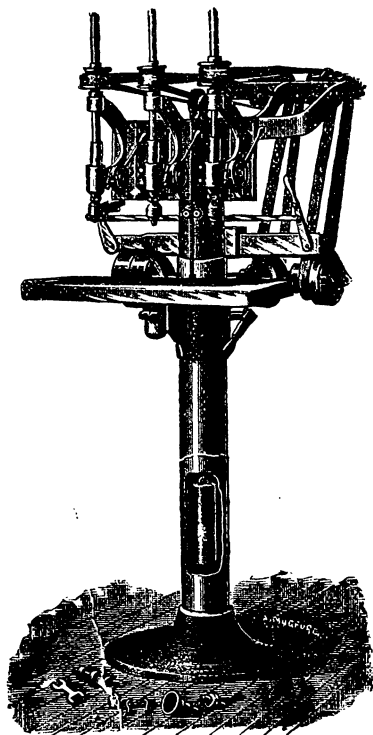
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Steel Bottles, any thickness or shape.

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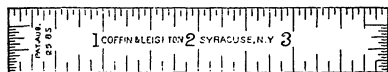
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Counter-balanced Spindles and Tables. Vertical range of table, 30 inches, and it will swing to right or left.

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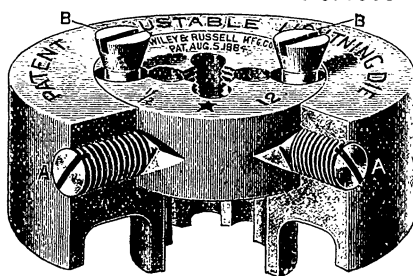


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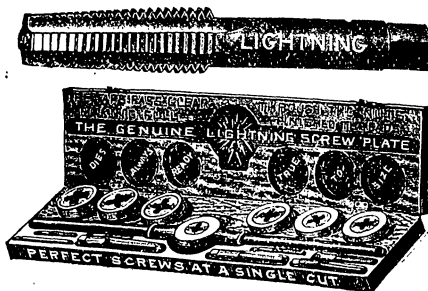
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DO PERFECT WORK WITH EASE.

Are Light, Strong, Simple, Durable and always give Perfect Satisfaction. Send for Catalogue.



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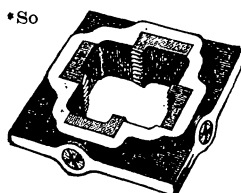
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*If by chance you do not think these points, or the saving of money, objectionable,*



\*So

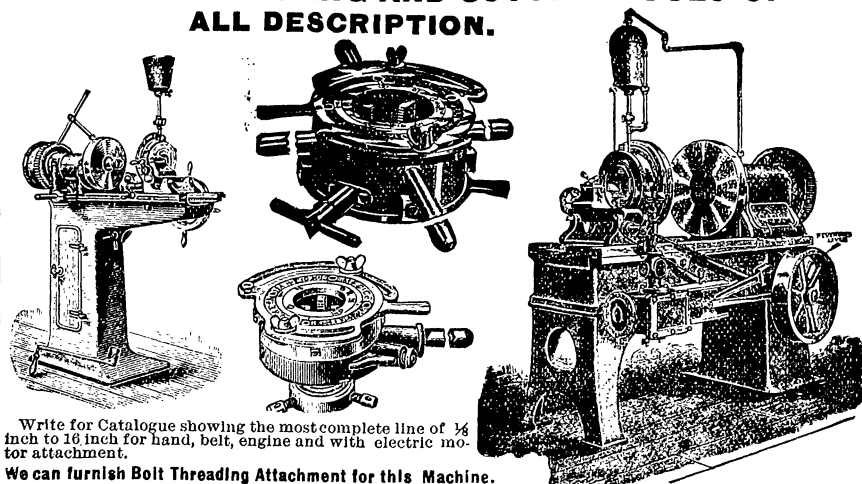
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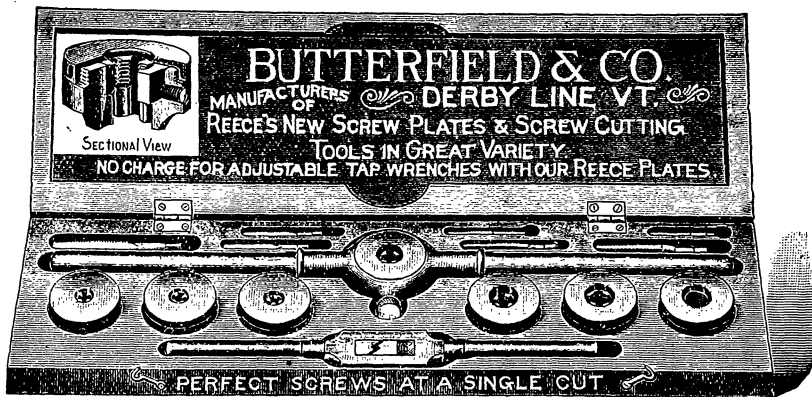
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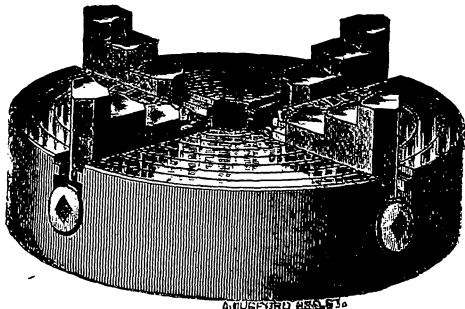
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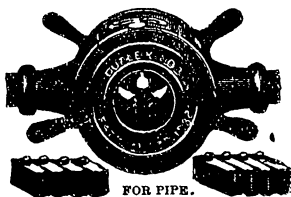
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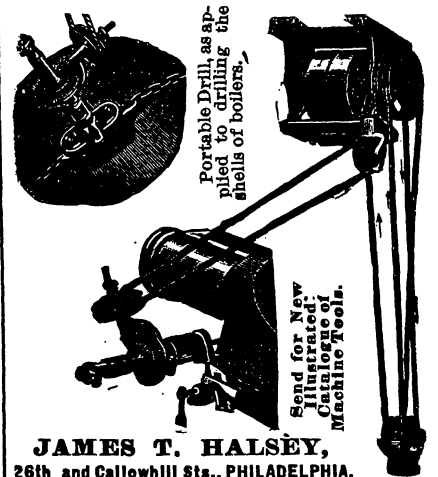
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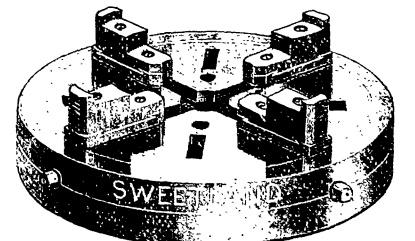
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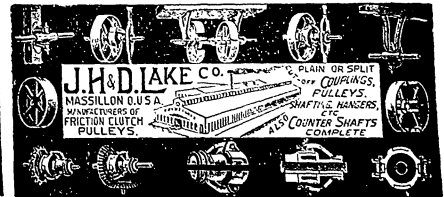
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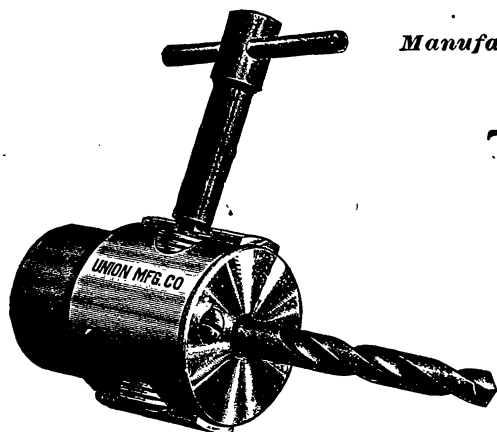
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# UNION MANUFACTURING COMPANY, NEW BRITAIN, CONN.

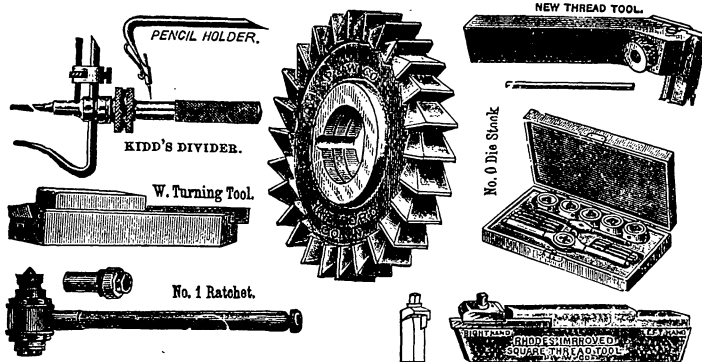
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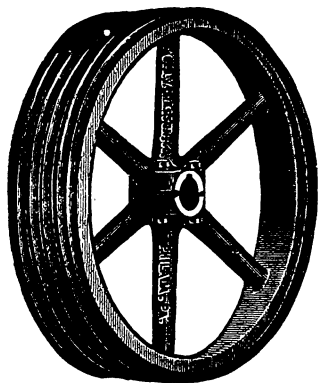
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100	2 1/4 "	0 to 1/2 inch.	8.00
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Dies, Gauges, Boiler Plate Punches, Tools for Turning, Threading, Forming and Cutting-off will cost the user more, and the quality will not be as good, if made by one having only limited facilities for such work, than if they are purchased of PRATT & WHITNEY Co., Hartford, Conn., U. S. A., Manufacturer of such goods in large quantity and great variety.

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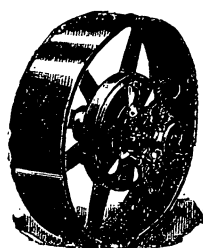
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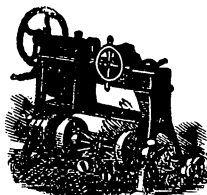


Screw Plates, cutting all sizes

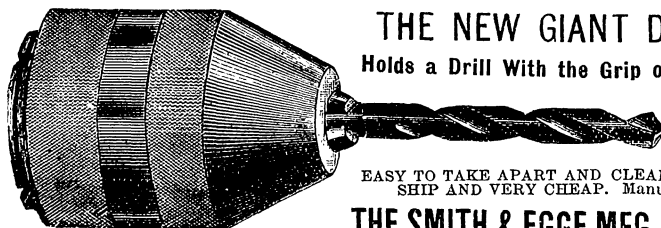
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Reamers in all sizes.

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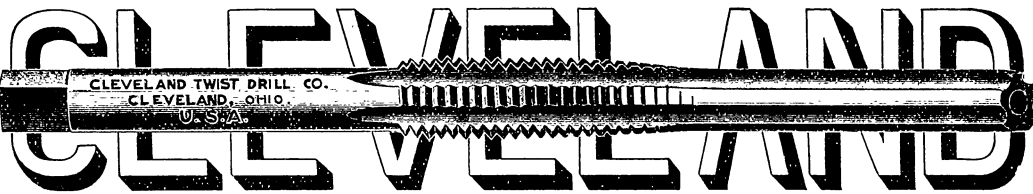
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1894.

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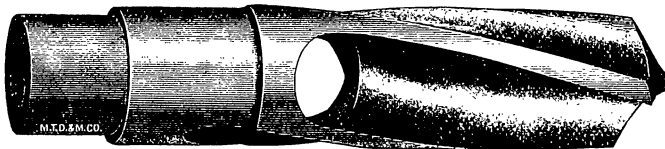
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Our Drills are Hot Forged. The best part of the steel IS NOT CUT OUT and thrown away.



They are TOUGHER, STRONGER, BETTER than is possible to attain by milling. Catalogue and Discounts sent on application.

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The hollow drill shown above is used for boring deep holes. It screws into the end of a pipe of such length as desired.



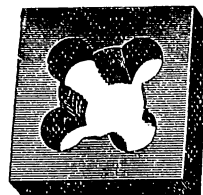
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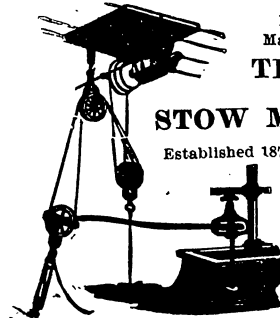
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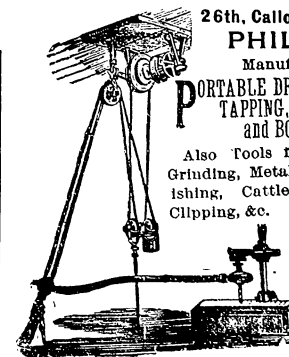
Manufacturers of

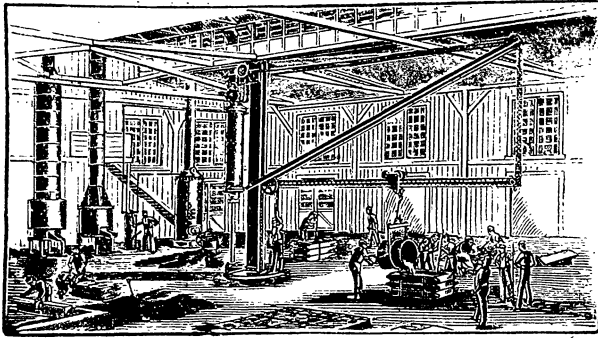
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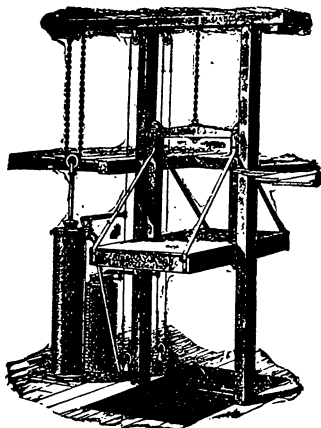
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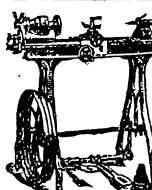
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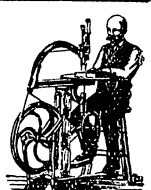
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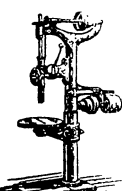
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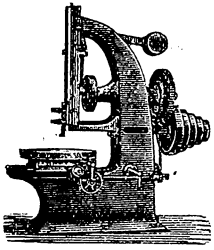
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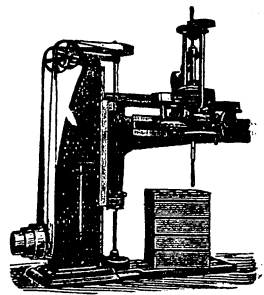


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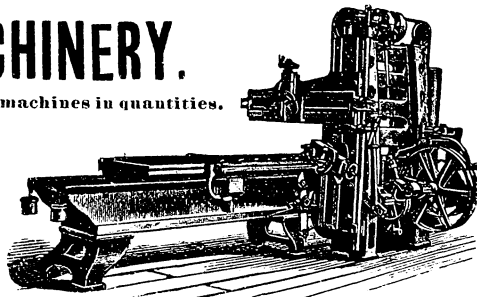
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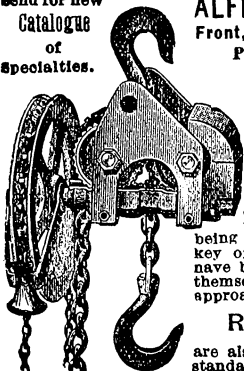
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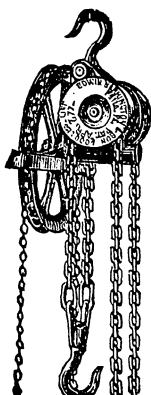
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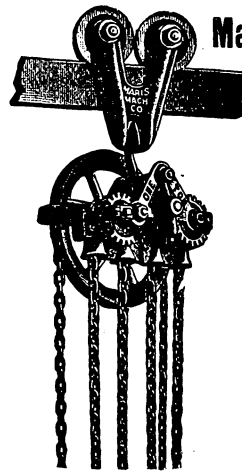
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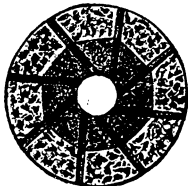
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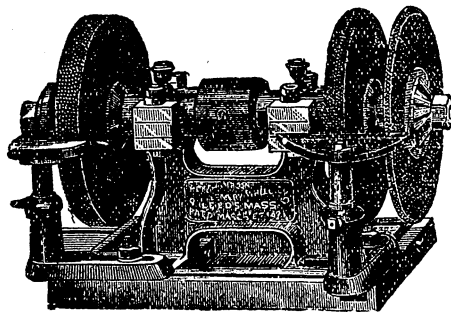
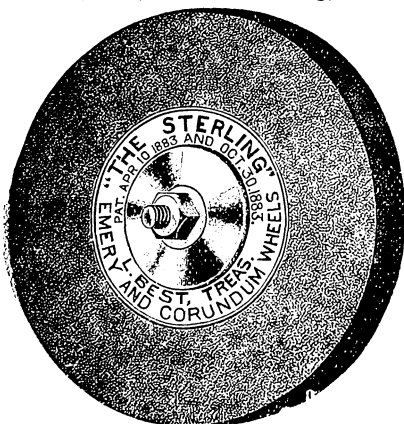
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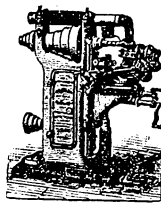
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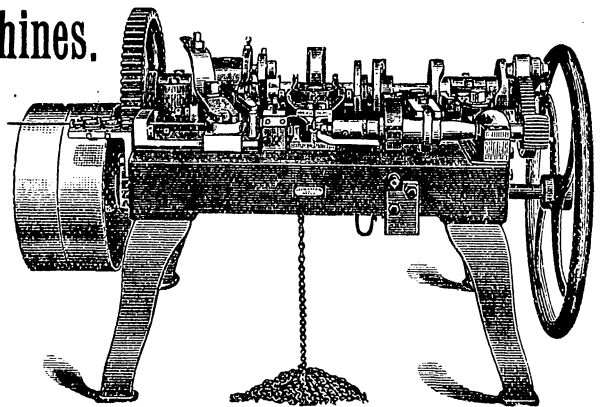
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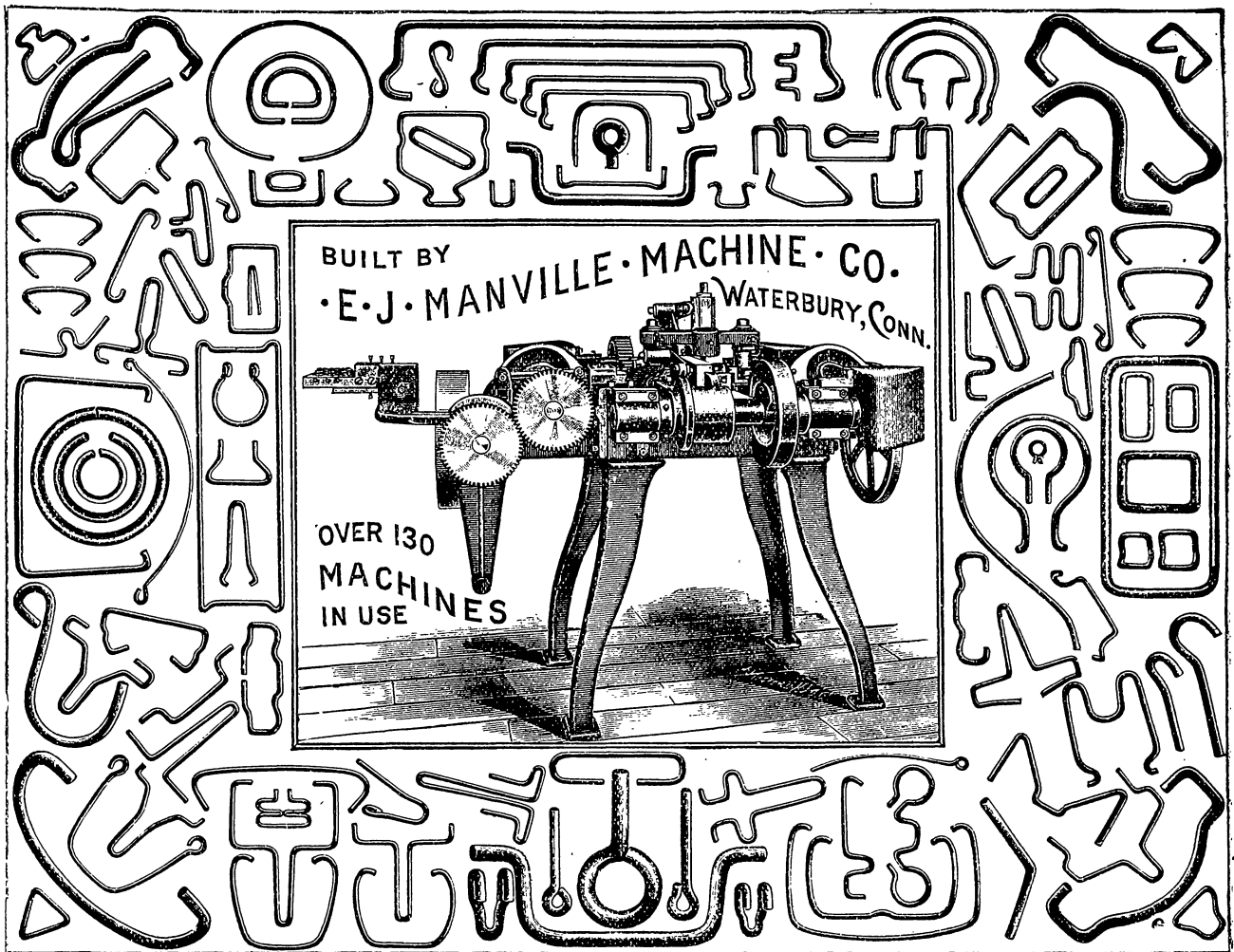
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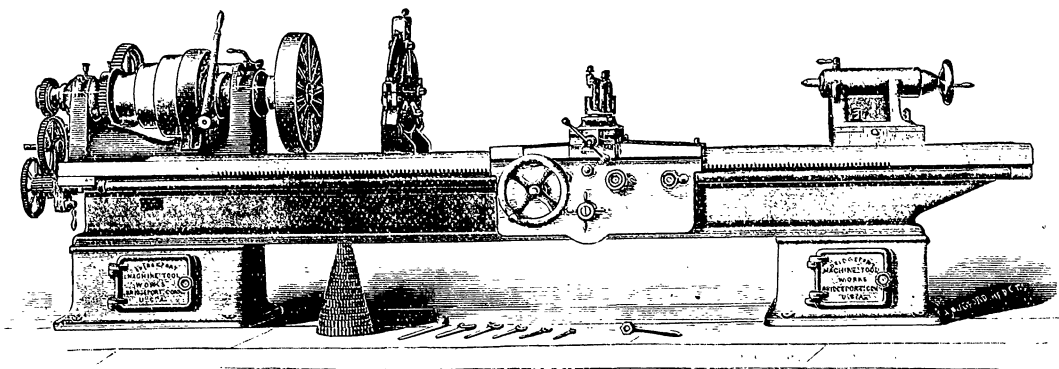
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One American Tool Co.'s No. 2 Cabinet Turret Lathe, with slide rest. In fine order.

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1 18 in. x 6 ft. New Haven.  
2 18 in. x 6 ft. F. E. Reed.  
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1 18 in. x 6 ft. Prentice.  
1 18 in. x 6 ft. Lodge & D.  
1 18 in. x 6 ft. Perkins.  
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1 18 in. Lathe & Morse.  
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Pratt & Whitney.  
1 22 in. x 22 in. x 4 ft.  
Pond.  
1 24 in. x 24 in. x 5 ft.  
New Haven.  
1 28 in. x 28 in. x 7 ft.  
New Haven.  
1 40 in. x 40 in. x 9 ft.  
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2 10 in. 3-Spindle Slate.  
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FOR SALE.—A Superior Lot of Cast Iron plates 2 ft. x 4 ft. They are made to avoid warping and cracking. Will sell in lots to suit.

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Center Crank with outboard bearing, Bronze boxes. Has heavy Fly Wheel and Pulley, Governor and Heater. It is thoroughly well built and is in excellent order. Price \$250, Phila. Who wants it? Answer quick!

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Knowles Independent Condenser for 350 H.-P. Barr  
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Brown & Sharpe Grinding Lathe.  
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400 tons 50 lb. Steel T Rails.  
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All selected and in excellent condition for relaying and only slightly worn.  
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26 x 48	23 x 36	12 x 18	9 x 9
30 x 60	16 x 36	12 x 24	7 x 7
30 x 72	15 x 24	14 x 24	5 x 5

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Heavy Plate and Bar Shears, Engines, Boilers, Pumps, Cranes, Fairbanks Testing Machine, &c., &c., for sale by  
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Buffalo Blowers and Heating Apparatus.  
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A Variety of Machinery, very cheap.  
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## SECOND-HAND IRON WORKING MACHINERY.

1 48 in. Gear Cutting Machine.  
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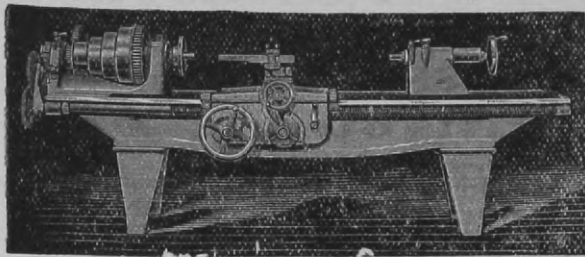
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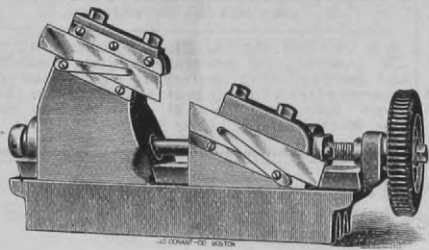
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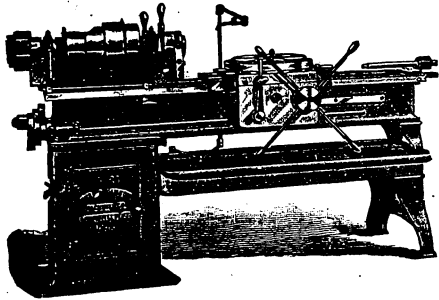
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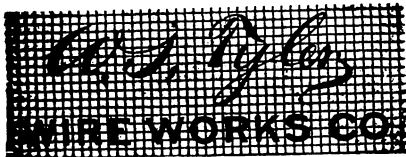
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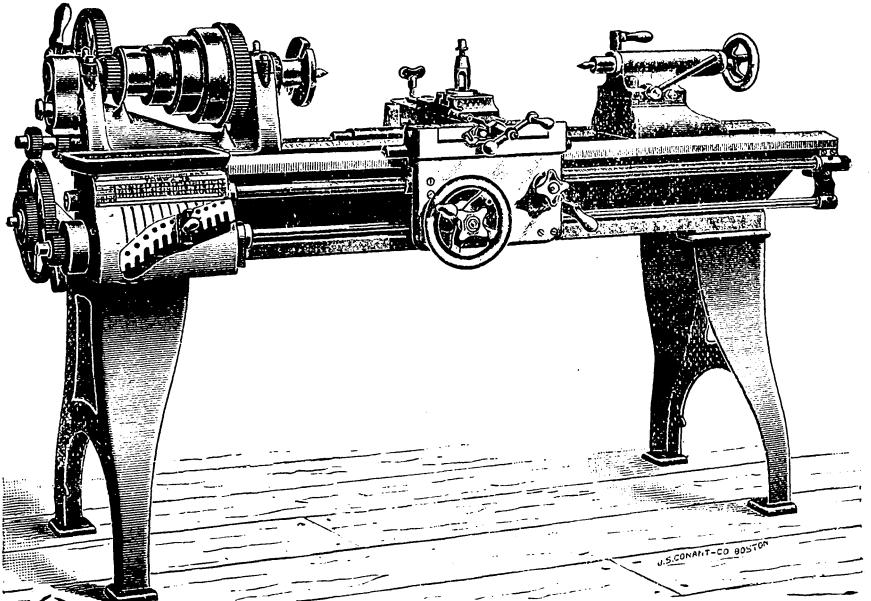
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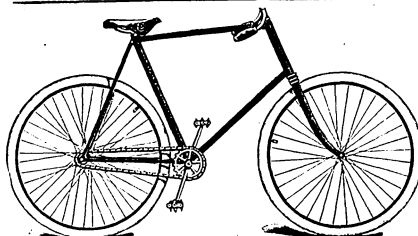
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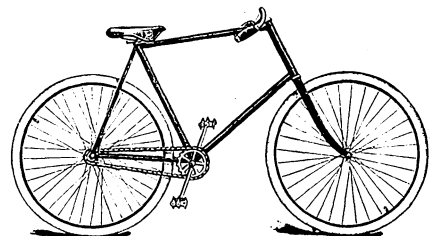
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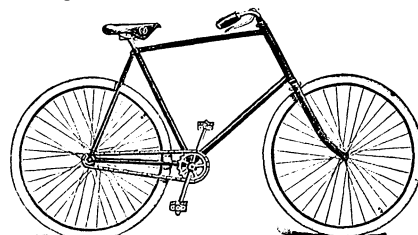


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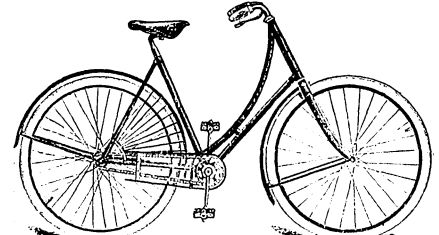


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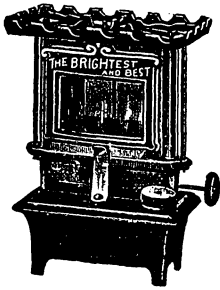
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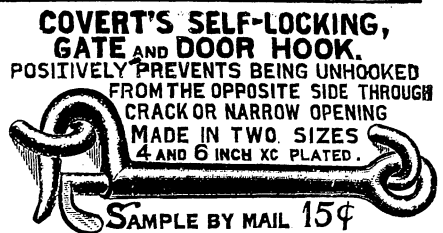


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FARMER, N. Y., U. S. A.

## Hardware Dealers Can Profitably SELL BICYCLES.

There is a large trade in Bicycles in all parts of the country and much of that trade naturally belongs to dealers in hardware. Good bicycles meet with a ready sale and pay a fair percentage of profit.

## COLUMBIAS

Are the representative high grade machines in America. A Columbia is the easiest machine to sell to the best trade because it is unquestionably the standard wheel of the world.

We want enterprising agents of good standing and solicit correspondence.

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221 Columbus Ave.,

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**THE WILLIAMS PRINTING CO.,**

## Commercial Printers AND Binders

ESTIMATES FURNISHED FOR ALL CLASSES OF WORK.

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The Only Freezers Having  
Pails with Electric  
Welded Wire  
Hoops.

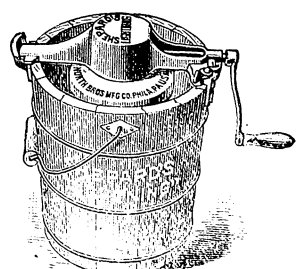
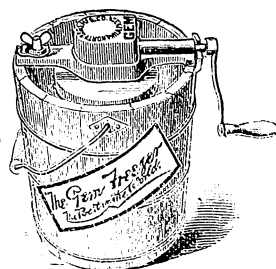
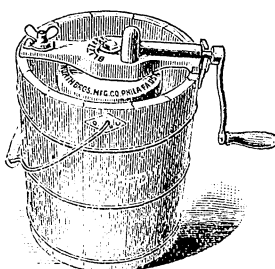
TWICE AS STRONG AS OLD STYLE FLAT HOOPS.

**GUARANTEED  
NOT TO FALL OFF**

Pails are made of Best Virginia  
White Cedar,

The best wood known to man for resisting the  
action of water.

For Particulars, Prices and Discounts, Write



"Three of a Kind" in that they are all BETTER than  
"the Best" of other Makers.

**NORTH BROS. MFG. CO., Philadelphia, Pa.**

NEW YORK AGENTS:  
John H. Graham & Co.  
113 Chambers St.

# CLARK'S BEST QUALITY SCREW DRIVERS.



Four Drivers and one Handle; all interchangeable; are hardened and tempered all over; made of best stock, and finished first-class.

FOR SALE BY ALL HARDWARE DEALERS.

MANUFACTURED BY

**R. H. BROWN & CO.**

NEW HAVEN, CONN.

*You take no risk on the quality  
We make only the best!*



**Sand  
Papers**  
IN  
Reams and Roll

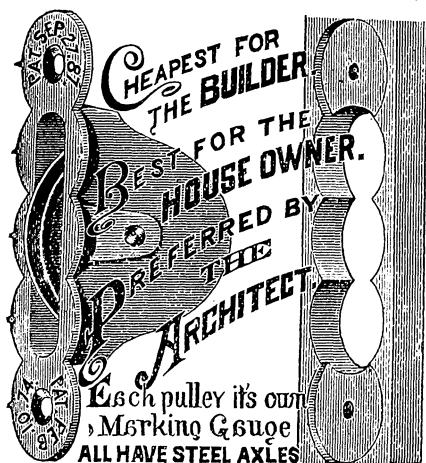
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Emery Paper  
Emery Cloth

**HAIR FELTING** for covering Boilers, Steam and Water Pipe, and lining Refrigerators.

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730 MARKET STREET, PHILADELPHIA;  
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145 MILK STREET, BOSTON;  
182 LAKE STREET, CHICAGO

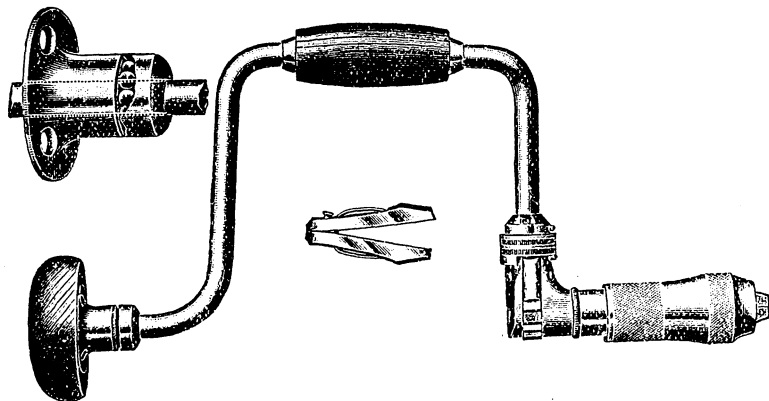
Palmer's Common Sense Frame Pulley.



MANUFACTURED BY

**PALMER HARDWARE MFG. CO., Troy, N. Y.**

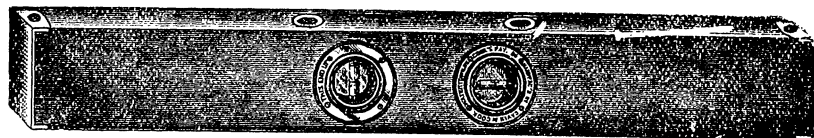
# BARBER IMPROVED BRACE.



Instead of reducing the price of our braces to meet competition, we have from time to time increased the cost of making the goods. Our latest improvement is the use of Ball Bearings, as seen in the cut. These balls prevent all wear, and cause the head to turn without friction. It is probably the best improvement which has been put on braces for many years. This has been the leading brace in market for a long time and we intend to make it worthy of its reputation for a long time to come. All Hardware Dealers will furnish them.

**MILLERS FALLS CO.,**

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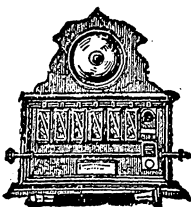
**COOK'S  
PATENT  
LEVEL.**

Made in Wood and Iron. Every Level Fully Guaranteed.

Inquire at your nearest hardware store for them. If not in stock, send to

TAKE NO  
OTHER.

**DAVIS & COOK,**  
WATERTOWN, N. Y.



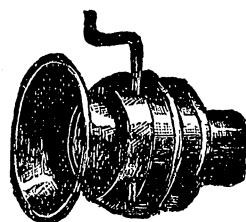
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204 FULTON STREET, NEW YORK,

Manufacturers of

SPEAKING TUBES, WHISTLES, ORAL, ELECTRIC  
MECHANICAL AND PNEUMATIC ANNUNCIATORS  
AND BELLS.

Complete outfits of Speaking Tubes, Whistles  
Electric, Mechanical and Pneumatic Bells. A full line  
always in stock. Send for new catalogue. Factory,  
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# CABINET LOCKS

OF EVERY KIND.

DRAWER LOCKS,

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A complete line of more than 1000 list numbers exclusive of our old  
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YALE CABINET LOCKS.

THE YALE &amp; TOWNE M'F'G CO.,

STAMFORD, CONNECTICUT.

New York. Chicago. Philadelphia. Boston. Pittsburg. San Francisco.

THE DEALER who sells what  
THE PEOPLE ask for

MAKES FRIENDS and MONEY, and  
SAVES TIME and TROUBLE.

The people ask for

## LePage's Liquid Glue,

And the people are right.

It is the strongest and best glue made. It has been  
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order and ACCEPT NO SUBSTITUTES.

Our name is on every label

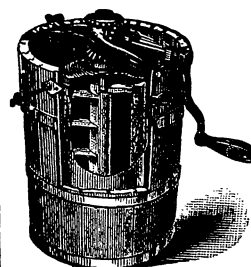
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GLOUCESTER, MASS.

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Pacific Coast Office, 23 Davis Street, San Francisco, Cal.

**IT PAYS.** Nothing about a Hard-  
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well as clean shelves and the goods neatly boxed  
with a fresh sample on the front. Customers  
are attracted by such a display of care, and no-  
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without notice. The Boxes are inexpensive,  
save the goods, make a big show for a small in-  
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**JESSE JONES & CO., 615 and 617 Com-  
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for Catalogue of prices styles, and references.



"RAPID."

Send for Descriptive Catalogue and Attractive Quotations.

**CLEMENT & DUNBAR,**  
No. 1129 Beach St., PHILADELPHIA.

"Home" Freezers,  
2 to 10 quarts.

"Rapid" Freezers,  
2 to 40 quarts.

"Rapid"  
Ice-Breakers,  
4 sizes.

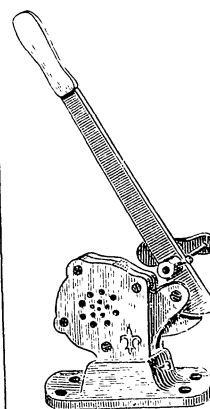
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Manufacturers of

## BENCH VISES.

Price Lists sent on application.



### Wire Shear.

Cuts off rods, leav-  
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burr. Just the tool  
for spokes, dowels or  
pins.

No. 1 cuts to 1/4 inch  
List \$7.00  
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List \$12.00

Discount on application.

**THE PRASSE CO.,**

10 1/2 Warren St., New York

**AMERICAN TOOL COMPANY,**  
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MANUFACTURERS OF  
**TOOL CHESTS**

Of all sizes, complete with tools, for Hardware, Toy,  
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Factory and Salesroom,

200 West Houston Street, near Varick.  
Also Machinists' Tool Chests, empty. Illustrated Cata-  
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Branch Warehouses: 85 and 87 John St., New York; 197 Lake Street, Chicago, Ill.

THE OLDEST AND MOST EXTENSIVE MANUFACTURERS OF

## Pumps, Hydraulic Rams, Garden Engines,

Yard Hydrants, Street Washers, Galvanized Pump Chain, Wind Mill Pumps and other Hydraulic Machines in the World.

## DOUGLAS' DIAPHRAGM PUMPS, "Loud Patent."

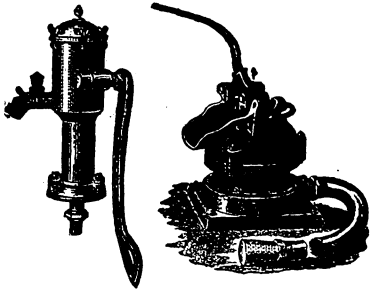
A LARGE CAPACITY AND EASY WORKING PUMP FOR

Water Works, Sewer Contractors, Foundation Builders, Mines, Quarries,

Fig. 209.

Fig. 381.

Fig. 145.



or wherever it is desired to raise a large quantity of water by  
**hand power.**

The pump has large valves (accessible by hand), and will pump water containing sand, gravel, sewage matter, &c., without choking or any perceptible wear.

### CAPACITY

from 3,000 to 4,500 gallons per hour.

These pumps are simple, durable and low priced.  
Made either as shown in cut for Hose or for **IRON** Pipe Suction underneath.

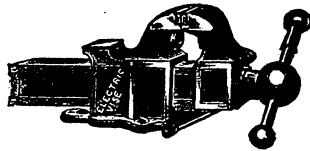
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C. I. Grindstone Frame.

**THE DEMING CO.**  
FACTORY  
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MANUFACTURERS OF  
HAND & POWER PUMPS, WELL SUPPLIES & C. VERTICAL STEAM PUMPING ENGINES.  
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## VISE.

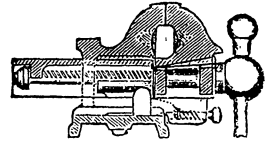


Patented Dec. 27, 1892.

IT HAS QUALITIES THAT ARE UNDISPUTED.

**Rapid, Active, Prompt.**

One movement in and out, one turn of the hand and the work is secured.



**The Capital Machine Tool Co., AUBURN, N. Y.**

## PRENTISS' PAT. VISES.

**The Leaders for 20 Years**

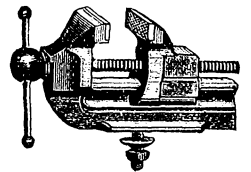
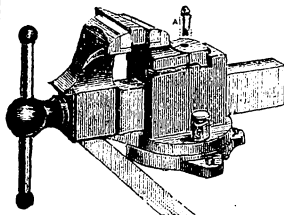
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ALL KINDS OF VISES.

PRENTISS VISE COMPANY,

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**ASHLAND O.**  
+ CATALOGUES FREE +  
Ashland Pump and Hay Tool Works.

SHARP TOOLS are a NECESSITY to a good workman,  
But without a GOOD WHETSTONE they are an impossibility

That is why it is always economy to buy

## PIKE'S WHETSTONES.

Pike's Indian Pond Scythe Stone, Strong, Sharp Grit, Quick Cutting.

**Scythe Stones.**

**Oil and Water Stones.**

GREEN MOUNTAIN,  
LAMOILLE,  
BLACK DIAMOND,  
PREM. QUINNEBAUG,  
WHITE MOUNTAIN,  
GENUINE RAGG,  
WILLOUGHBY LAKE.

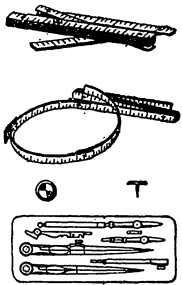
WASHITA,  
ARKANSAS,  
HINDOSTAN,  
WATER OF AYR,  
RAZOR HONES,  
TABLE HONES,  
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**THE PIKE MFG. CO., - Pike Station, N. H.**

The New York Safety Dumb Waiter.  
"The Manhattan Dumb Waiter."  
"The Improved Humphrey Hand Elevator."  
Made specially to be sold by Hardware Stores.  
Thousands in use. Catalogues on application.  
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NEWARK, NEW JERSEY.  
Formerly of Poughkeepsie, New York.

**SPEAKING TUBE ETC.**  
FOR ILLUSTRATED CATALOGUE  
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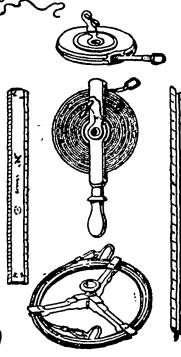
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CHICAGO, ILL.  
**THEATRICAL HARDWARE.**  
SEND FOR ILLUSTRATED PRICE LIST



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BRANCH: CHICAGO.  
FACTORIES: HOBOKEN, N.J.

MANUFACTURERS OF EXCELSIOR MEASURING TAPES.  
SUPERIOR QUALITY, LATEST IMPROVED. GREATEST VARIETY.  
— STEEL • METALLIC • LINEN • POCKET TAPES. —  
EXCELSIOR BAND CHAINS FOR SURVEYORS, LAND CHAINS, &c.  
— **K & E CO FOLDING POCKET RULES.** —  
NO WARPING, NO SHRINKING, NO ILLEGIBLE JOINTS, NO BULK.  
2 3.4 5.6 8 FOOT, ALSO WITH PATENT SPRINGS.  
— FLAT & TRIANGULAR BOXWOOD SCALES, BEST MADE. —  
PLUMB BOBS, THUMB TACKS, DRAWING INSTRUMENTS.

PRICE LISTS & QUOTATIONS PROMPTLY SENT.



◀ **IRON** INSTEAD OF **WOOD.** ▶

**GALVANIZED IRON TUBING and CURB,**

— FOR —  
**CHAIN PUMPS,**  
(Kegler's Patent)

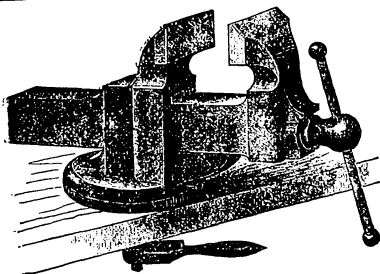
Are Giving Universal Satisfaction,  
**BECAUSE:**

They do not rust and accumulate filth—always clean. Extreme lightness is combined with strength and durability. No freezing. No waste of water by reason of enlarged reservoir at top of tubing. No annoying wheel at bottom. Easy to handle.

Tubing weighs less than 1/4 lb. per ft., is connected by couplings and can be attached to any make of curb.

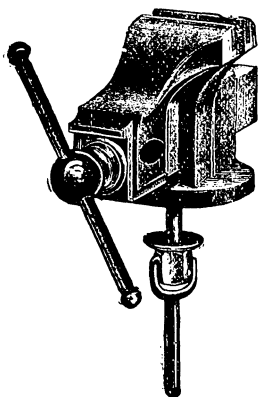
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**Bellevue Pump Co., Bellevue, Iowa.**



**VICES OF ALL SIZES AND STYLES.**

**ATHOL MACHINE CO.,**  
ATHOL, MASS., U. S. A.  
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**HOLLANDS' OFFSET JAW VISE.**

Specially adapted for drill press work where chucks can not be used and equally good for special or regular bench work.

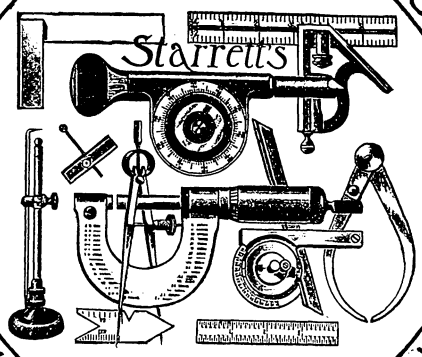
**Hollands Mfg. Co.,**  
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Manufacturers all styles VISES.



**N. Y. MALLET AND HANDLE WORKS,**  
MANUFACTURERS OF  
**MALLETS.**  
Also Cotton and Bale Hooks.  
Patented Feb. 13, 1877, a new combination of Hooks.  
**456 E. HOUSTON ST.,**  
New York City.

**STARRETT'S FINE TOOLS**

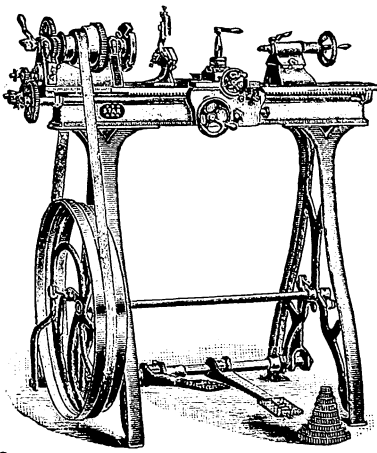
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**ARE WARRANTED ACCURATE**

U.S. STARRETT, ATHOL, MASS.

★ **THE STAR LATHE.** ★



A Screw Cutting Engine Lathe  
With Automatic Cross Feed  
Patented  
For Foot or Steam Power  
No. 1 and No. 2.  
Swing 9 Inches  
25 and 36 inches between Centers  
Beds 43 and 54 inches Long  
Send for a Descriptive Circular  
Sold at MANUFACTURERS' Prices!

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*Manufacture To Order*  
**SPECIALTIES & NOVELTIES, PATENTED ARTICLES.**  
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## OPERATING

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## GENERAL OFFICE

96 &amp; 98 READE ST.,

NEW YORK.

# SAWS

## WENTWORTH'S PATENT NOISELESS SAW VISES,

WITH RUBBER CUSHIONED JAWS.

Prevent all vibration and render Saw Filing noiseless. Will make no more noise than Filing on a Solid Piece of Iron.

Have a Larger Sale than All Other Kinds Combined.

### PRICE LIST.

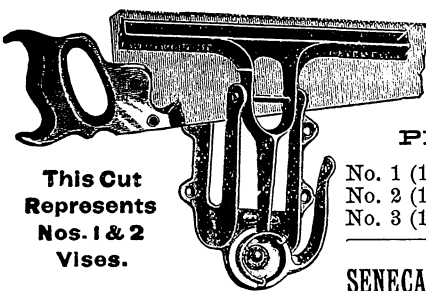
No. 1 (11 inch Jaws),	-	\$15.00
No. 2 (15 inch Jaws),	-	21.00
No. 3 (11 inch Jaws),	-	18.00

### LIBERAL DISCOUNT TO THE TRADE.

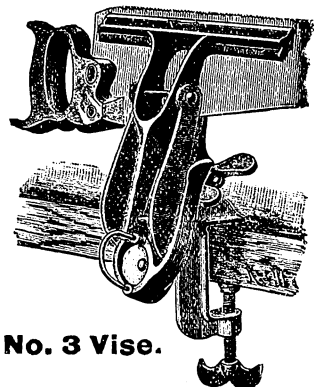
LONGEST JAWS, HEAVIEST AND BEST FINISHED. Sold by all leading jobbers of general Hardware at Factory Prices.

—MANUFACTURED BY—

SENECA FALLS MFG. CO., 255 Water St., Seneca Falls, N. Y.



This Cut Represents Nos. 1 & 2 Vises.



No. 3 Vise.

BUSINESS ESTABLISHED 1798.

INCORPORATED 1891.

**JOS. F. McCOY CO.,**

26 Warren St., New York,

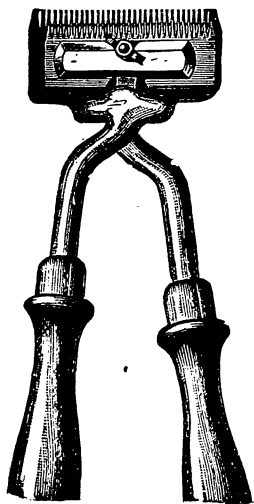
Headquarters for

## Coates' Horse Clipper

AND  
Barber  
Clippers.

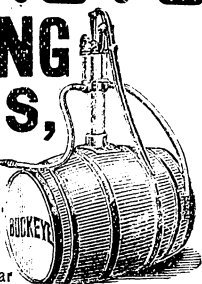
ALSO  
THE "BELL"  
AND  
THE "COMET"  
Horse  
Clippers.

At prices to suit  
the times.

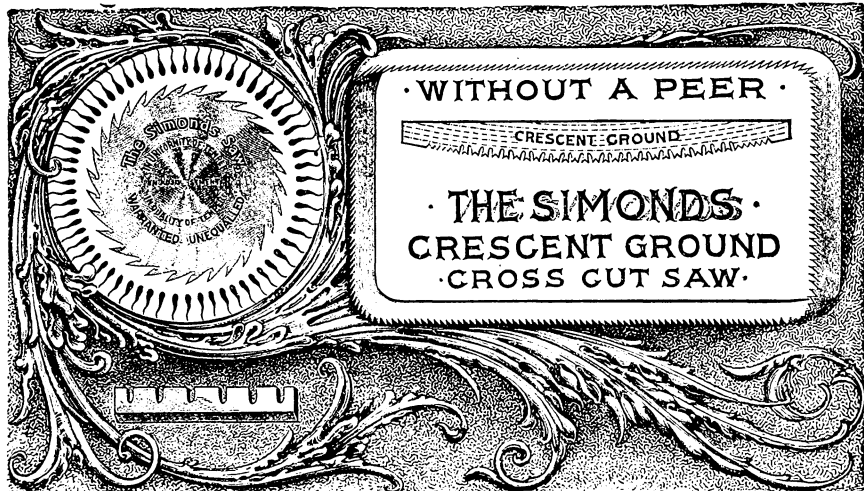


## BUCKEYE SPRAYING PUMPS,

Also BUCKEYE Force and Lift Pumps, COLUMBIA Steel & Iron Turbine Wind Engines, STEEL DERRICKS, Iron Fence, BUCKEYE Lawn Mowers, &c. Send for circular  
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The Iron Age Standard Hardware Lists for use in Price Books. Compiled by R. R. WILLIAMS, Hardware editor of The Iron Age. Second edition revised. \$0.25  
For sale by David Williams, 96-102 Reade St., N. Y.



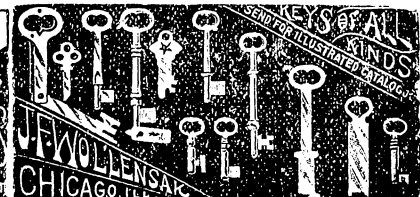
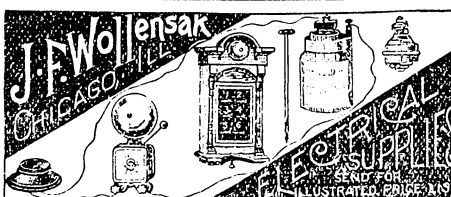
**Simonds Mfg. Co. Simonds Saw Co.**  
FITCHBURG, MASS. CHICAGO, ILL. SAN FRANCISCO CAL. PORTLAND, ORE.

## The Taintor Positive Saw Set.

Mechanics are now inquiring for this tool, and Hardware Dealers should have them in stock, or at least have a sample.

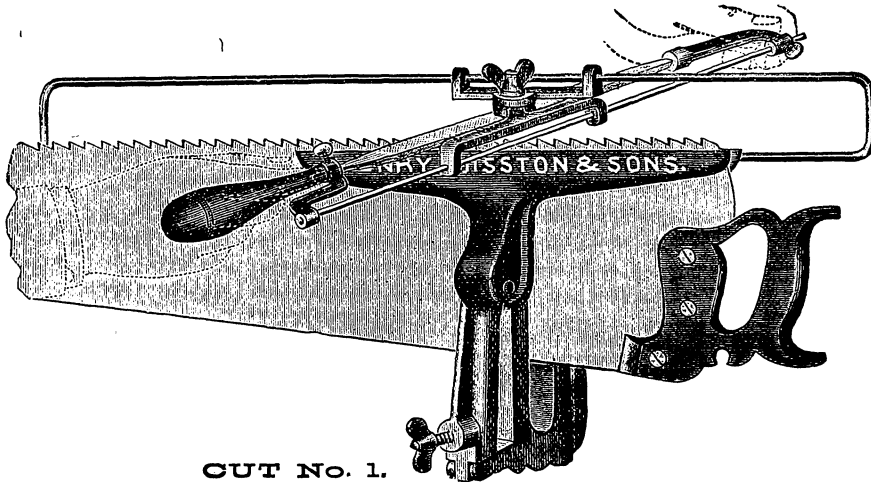
For Prices and Discounts, address

**WIEBUSCH & HILGER, LTD., SOLE AGENTS,**  
84 and 86 Chambers Street, **NEW YORK.**



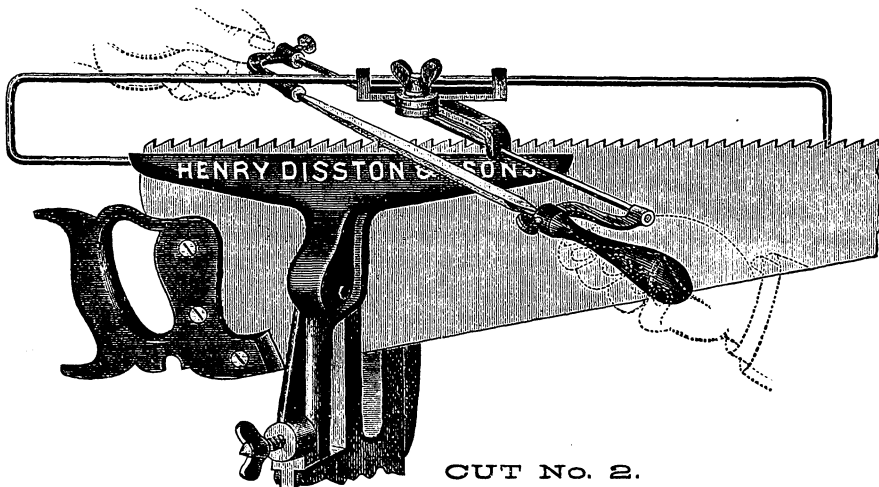
# DISSTON'S Improved Saw Clamp AND FILING GUIDE.

ESPECIALLY DESIGNED TO ASSIST THOSE NOT SKILLED IN THE ART OF SAW FILING TO FILE A SAW CORRECTLY.



CUT No. 1.

Cut No. 1 shows a saw and the attachment in proper position for filing the first side; and Cut No. 2 shows the saw and attachment reversed and in position to file the second side. There are three marks on one of the hubs of the swivel attachment, and one mark on the other. One of the three marks shows when it is in position No. 1, and the other designates when it is in position as shown in No. 2. The third, or centre, marks show when it is in position for filing Rip Saws.



CUT No. 2.

To obtain the correct position, loosen the wing nut and move the guide around to the point desired; after tightening wing nut, loosen screw in file handle, then turn handle until file gives the shape tooth wanted.

A good way is to select a tooth of correct shape and let file down into it, tighten set screw in handle, then file a tooth to see if the shape suits. If not turn the file a little to the right or left and try another tooth until the proper shape is obtained. Then file every other tooth, see cut No. 1; when one side is filed, reverse saw and attachment and adjust as in No. 2, and file the other teeth. For Rip Saws, place the file at right angles with the saw and file every tooth. Always keep the file as nearly horizontal as possible.

This filing guide is sold only attached to our No. 3 Improved Clamp or Vise, and not sold separately. We recommend this as the best saw clamp on the market, being quickly and easily adjusted, and not liable to get out of order.

Write for price including No. 3 Clamp, Filing Guide, File and Handle complete. Packed one in a wooden box.

**Henry Disston & Sons, Philadelphia, Penn.** INCORPORATED,



Samuel W. Allerton, Pres.

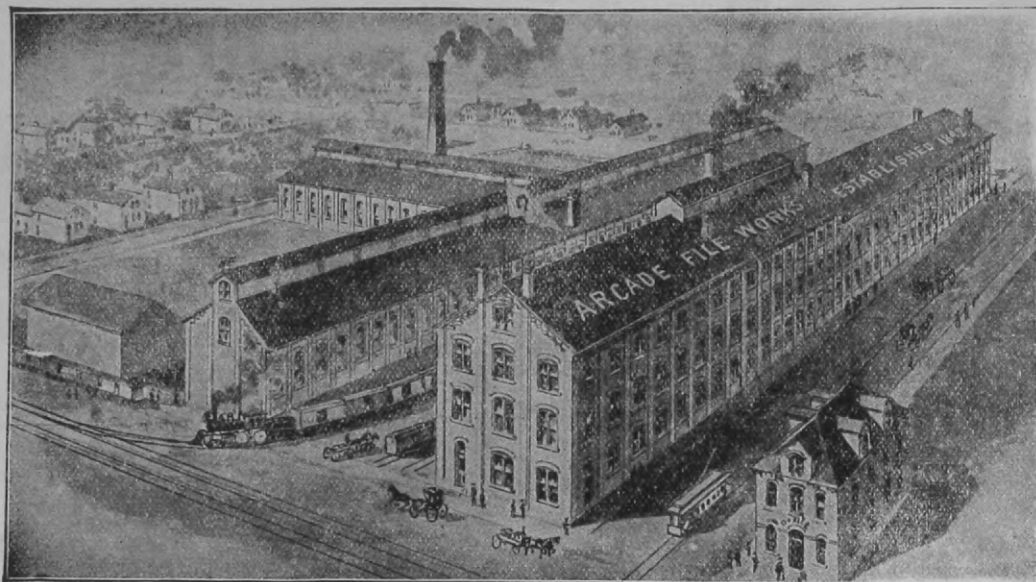
Courtlandt C. Clarke, Sec. and Treas.

Alfred Weed, Vice-Pres. &amp; Gen. Manager.

# ARCADE FILE WORKS.

ESTABLISHED 1842.

Eastern Office and Warehouse,  
83 READE STREET, NEW YORK CITY.



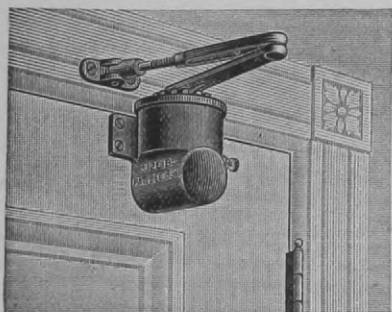
Western Office and Warehouse,  
23 LAKE STREET, CHICAGO, ILL.

Works: ANDERSON, IND.

## THE FILES THAT LEAD THEM ALL.

THE BEST EQUIPPED FILE WORKS IN THE WORLD.

The fact that we alone use the improved File Machinery recently invented by Alfred Weed, and the even heat of natural gas, enables us to produce a file that will cut faster and wear longer than any on the market.



Bardsley's Liquid Door Check and Spring

Perfect in action, durable, neat in appearance, low in price and fully warranted. Responsible Agents wanted in the principal cities.

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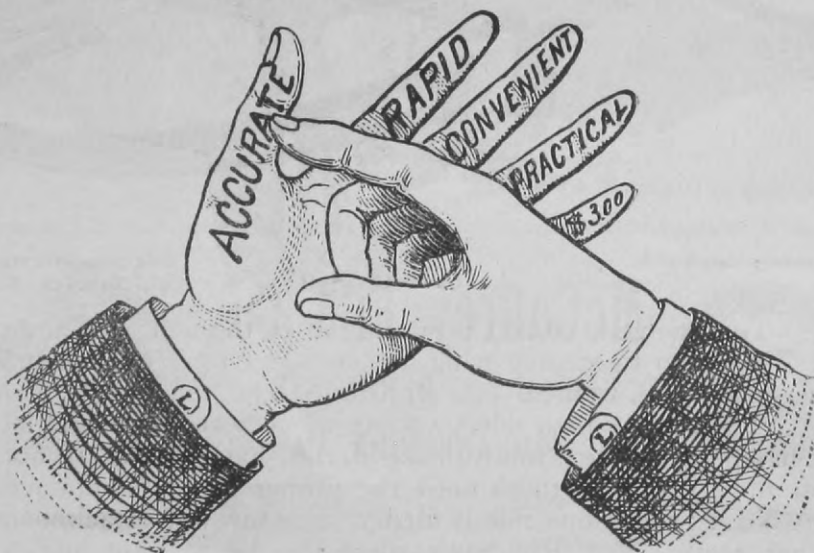
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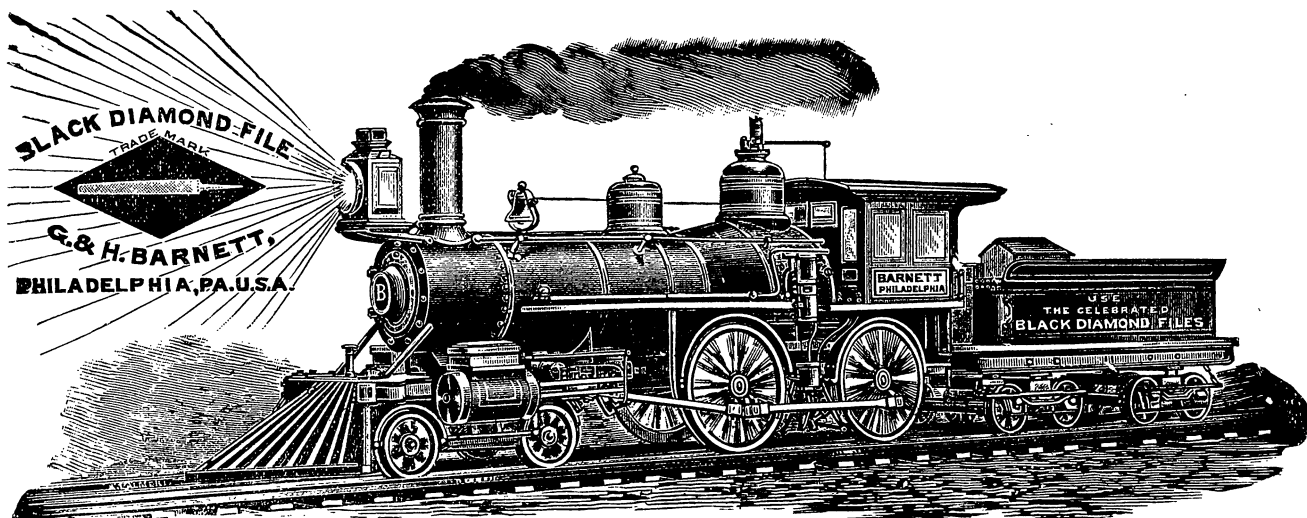
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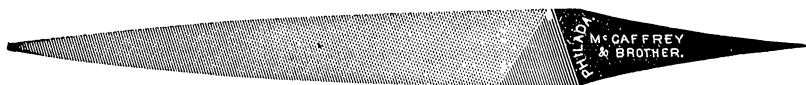
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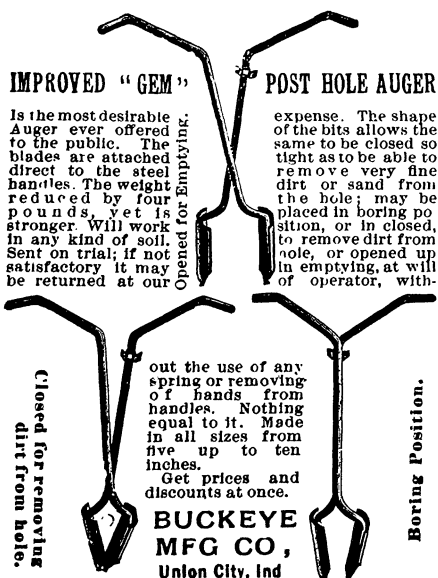
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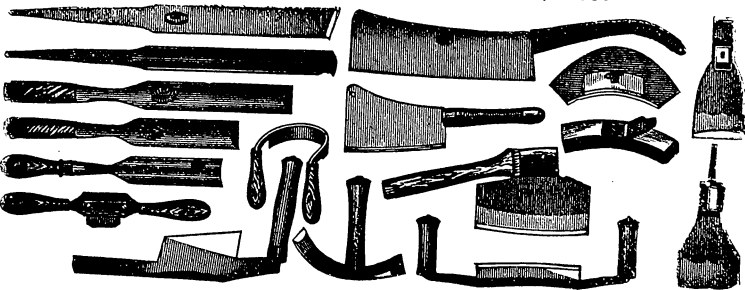


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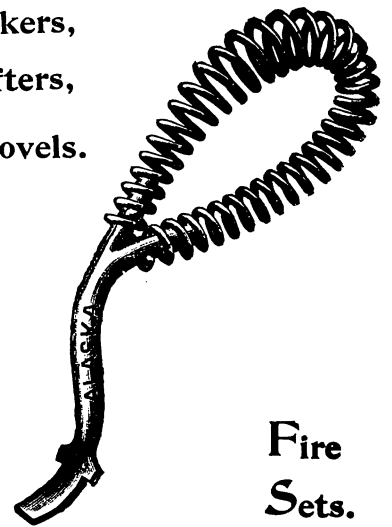
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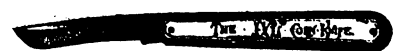


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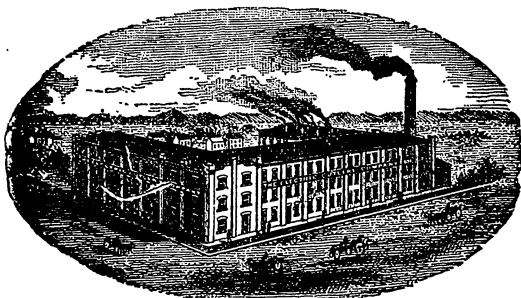
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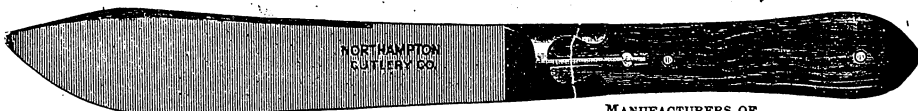
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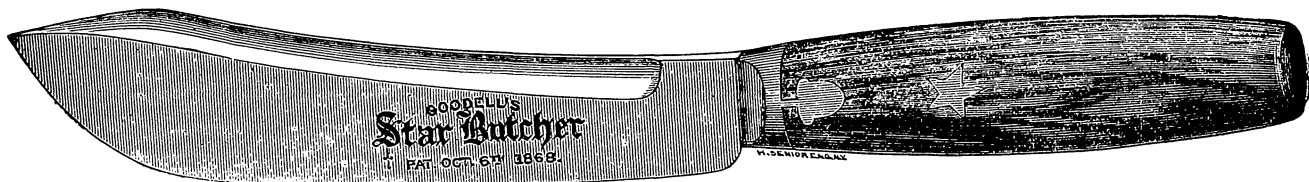
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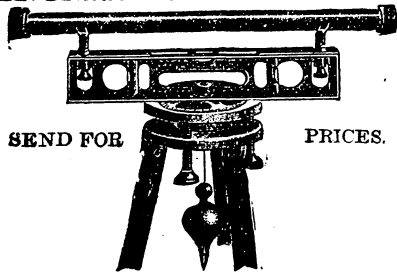
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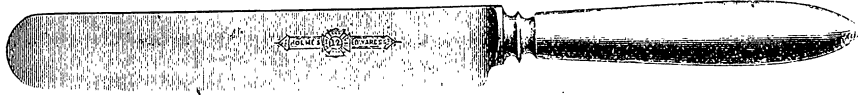
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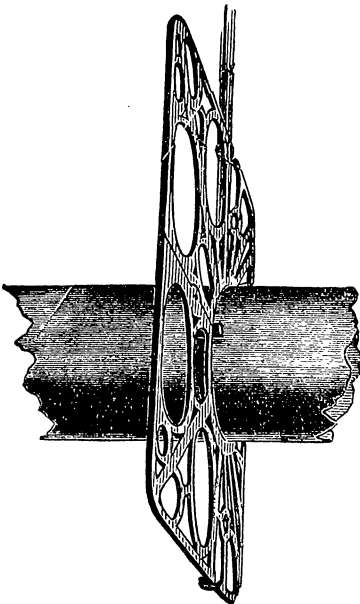
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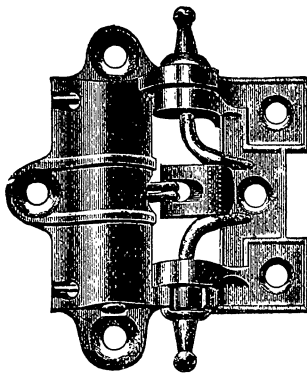
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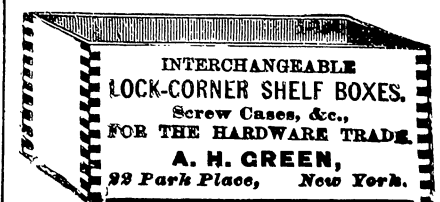
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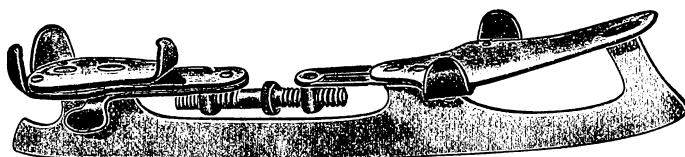
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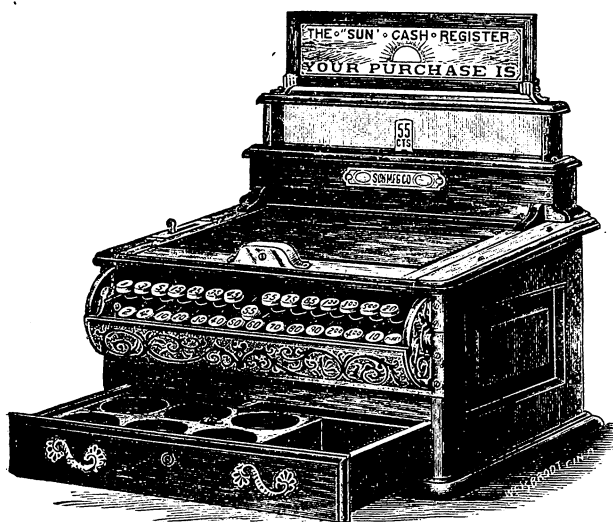
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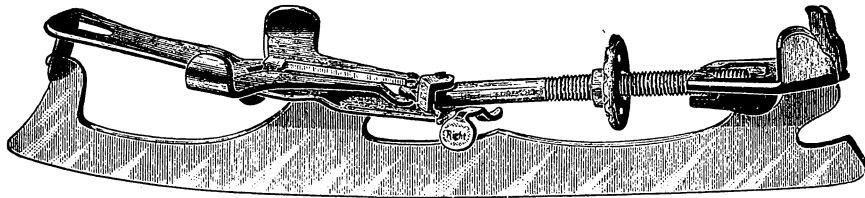
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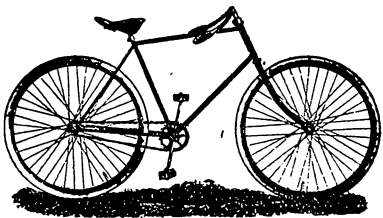


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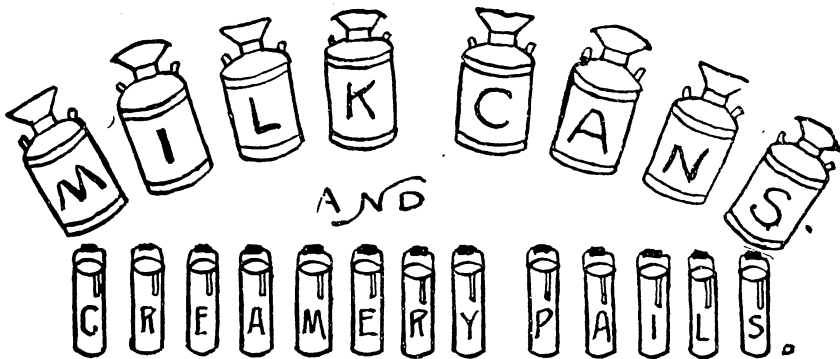
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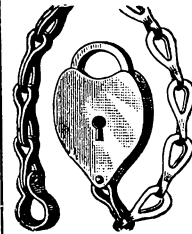
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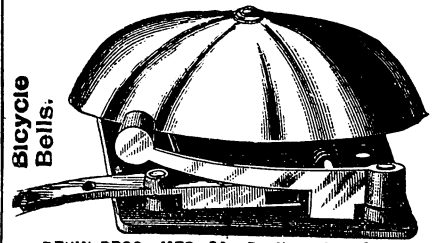
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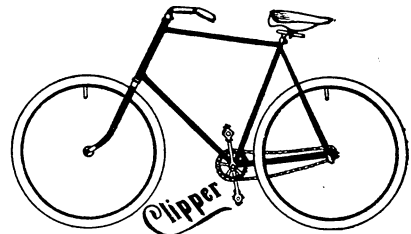
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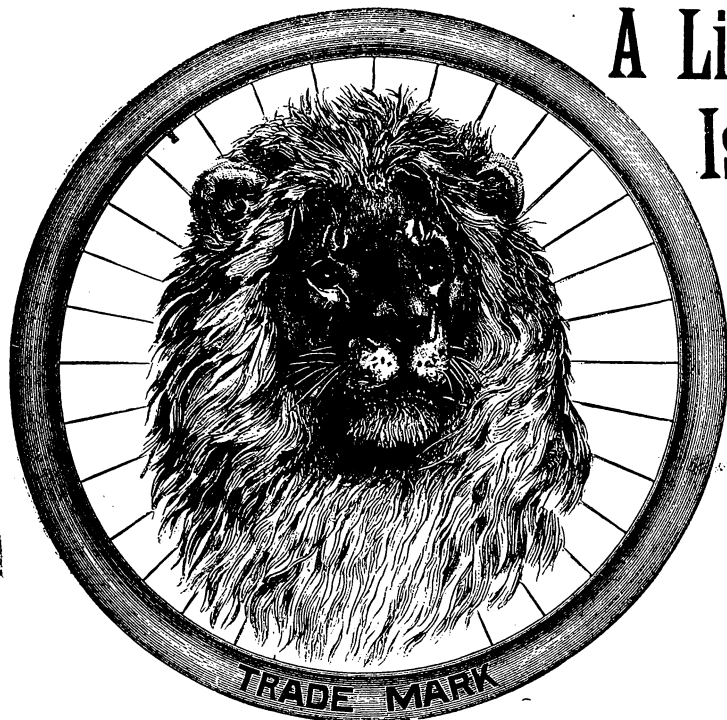
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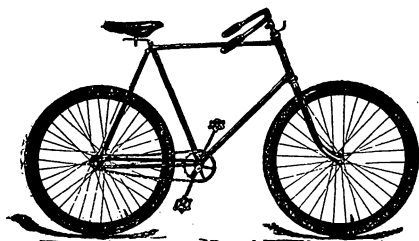
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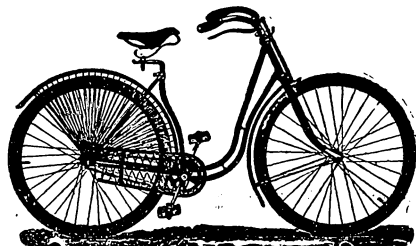


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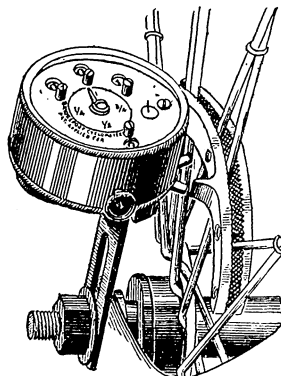
Electric Toy Making, Dynamo Building and Electric-Motor Construction. By T. O'CONOR SLOANE, A.M., E.M., Ph.D. This work treats of the making at home of electrical toys, electrical apparatus, motors, dynamos, and instruments in general and is designed to bring within the reach of young and old the manufacture of genuine and useful electrical appliances. The work is specially designed for amateurs and young folks. Very fully illustrated..... \$1.00

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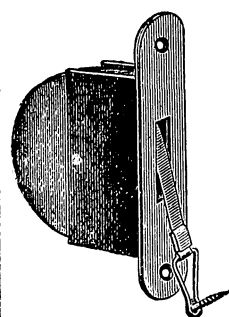
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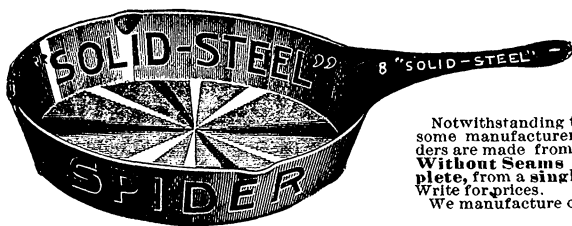
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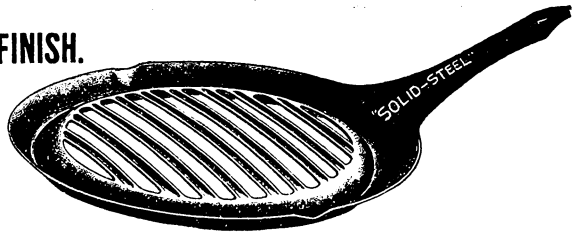
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**"SOLID-STEEL" SEAMLESS HOLLOW WARE.**

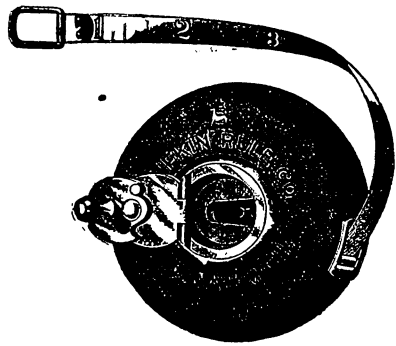
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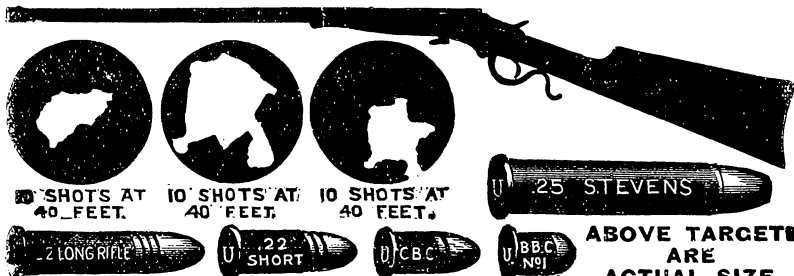
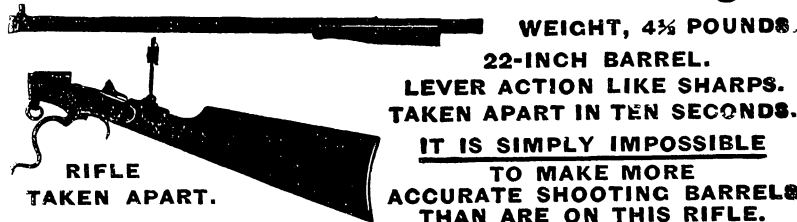
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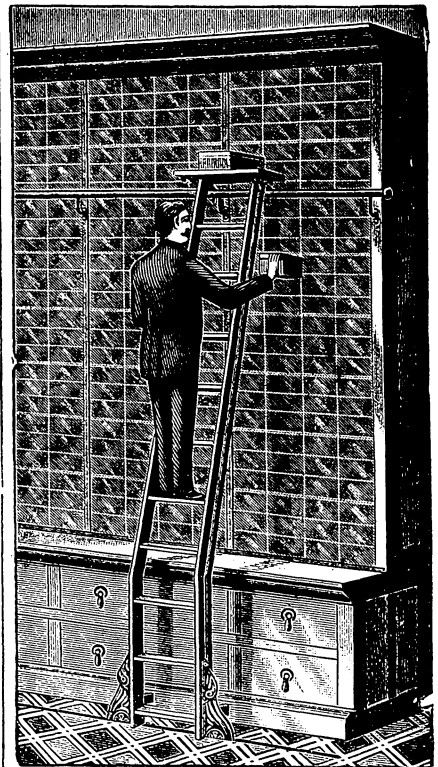
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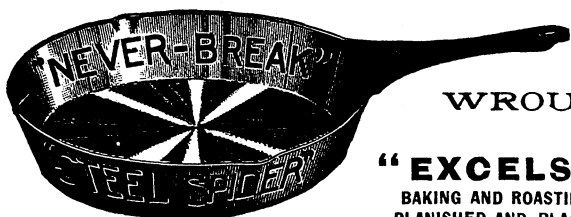
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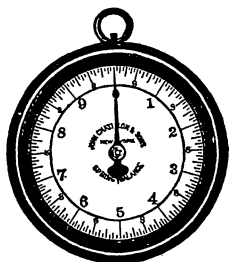
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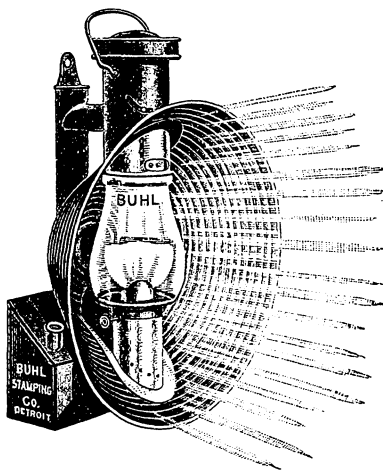
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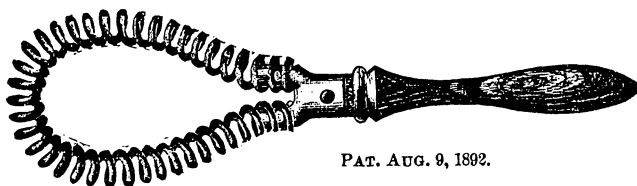
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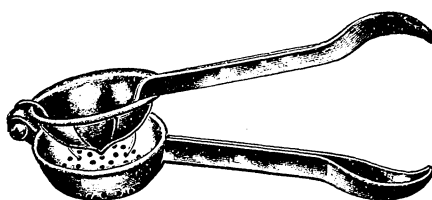
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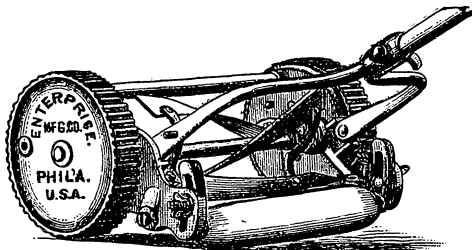
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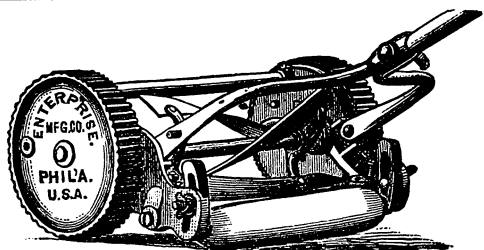
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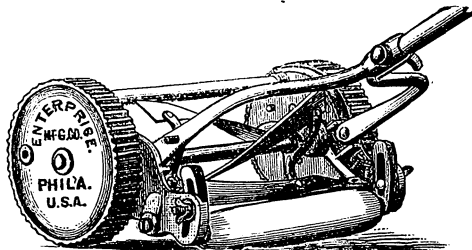
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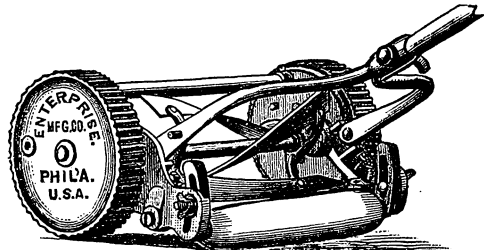


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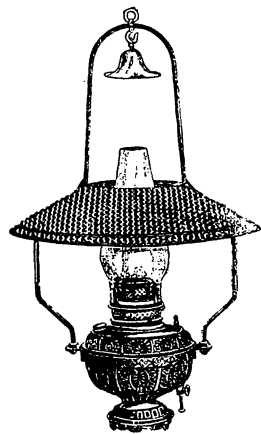
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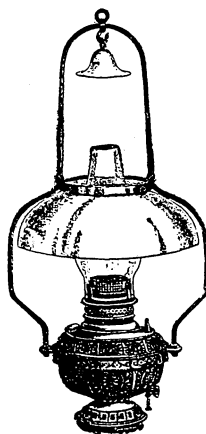
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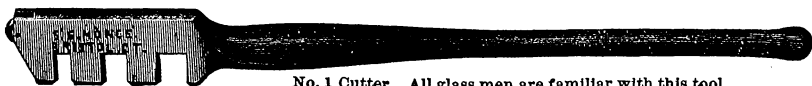
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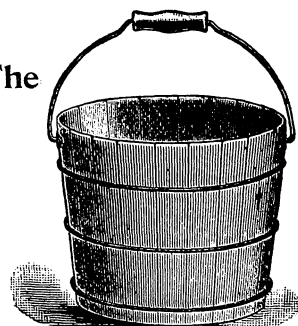
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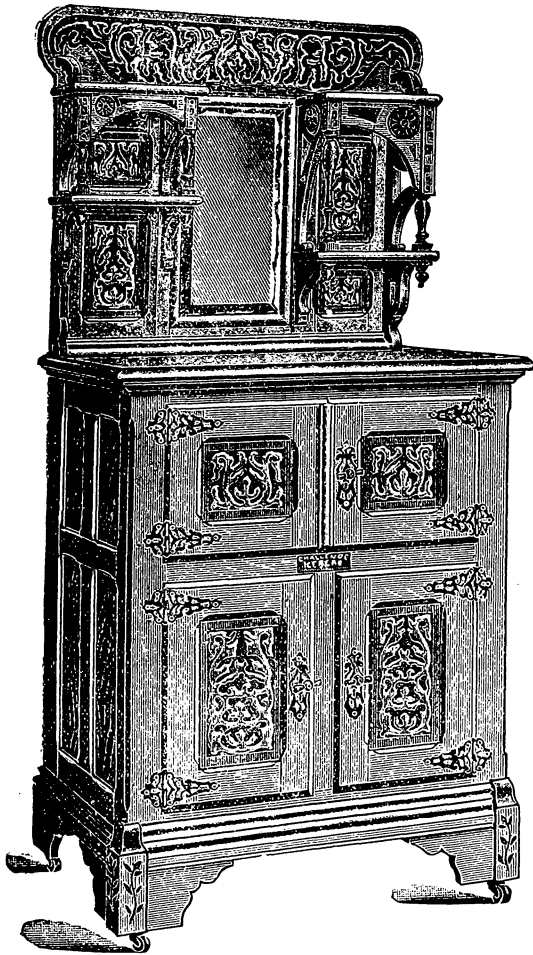
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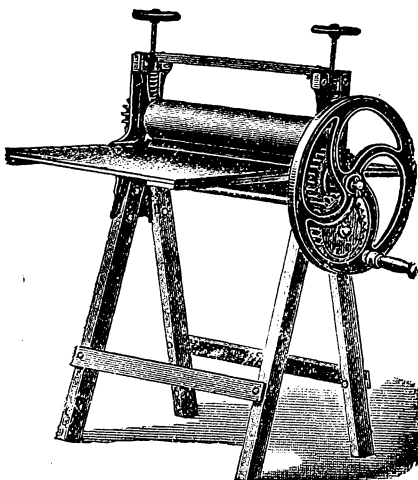
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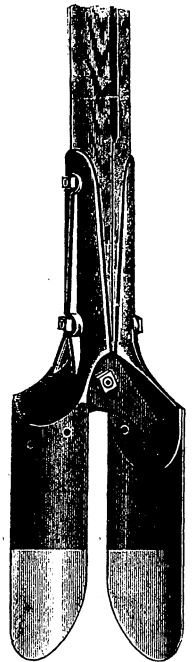
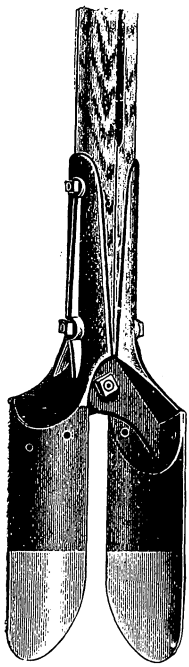
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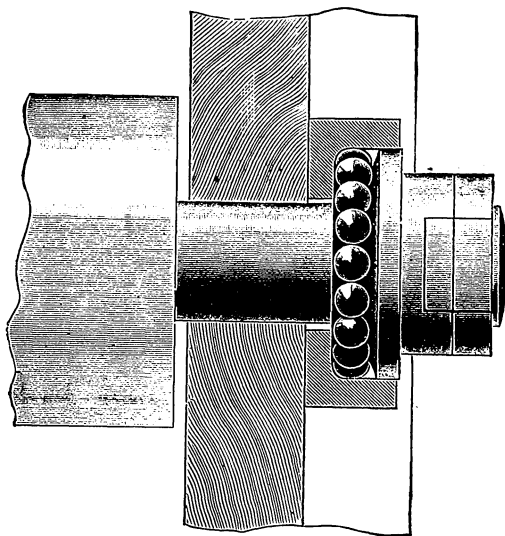
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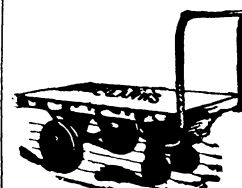
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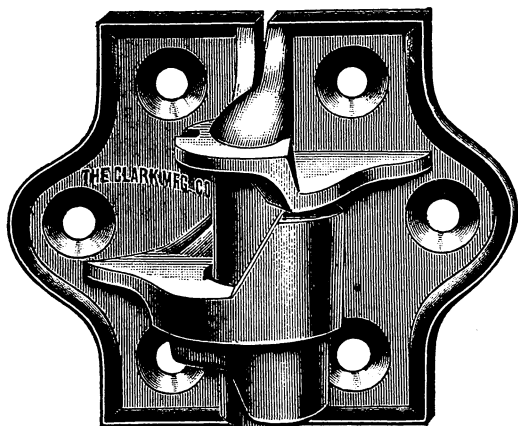
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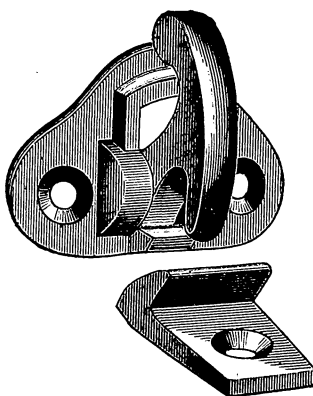
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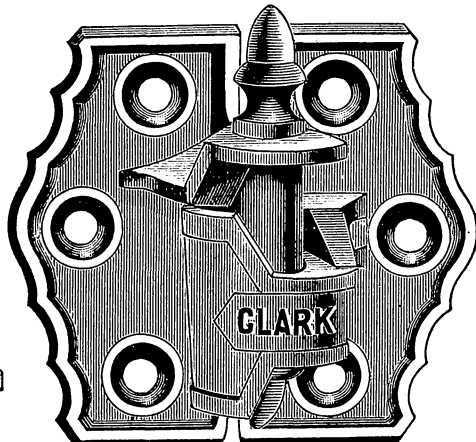
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No. 1 for wood. No. 3 and 5 same pattern for brick.



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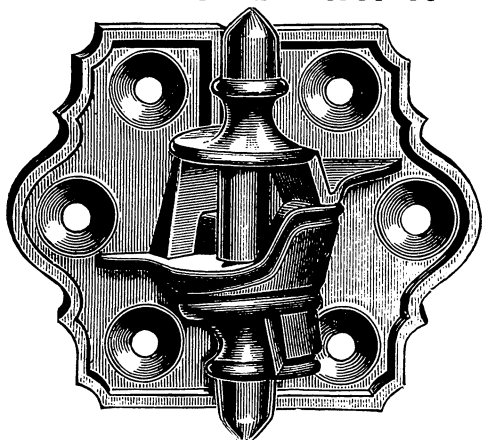
Our Blind Hinges and Catches  
take the same size screw.



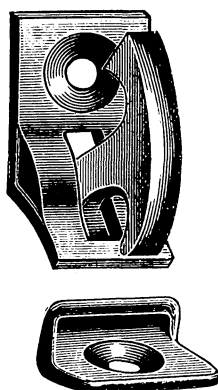
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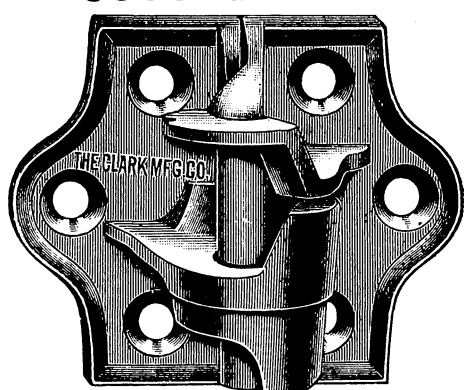


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Fastening.

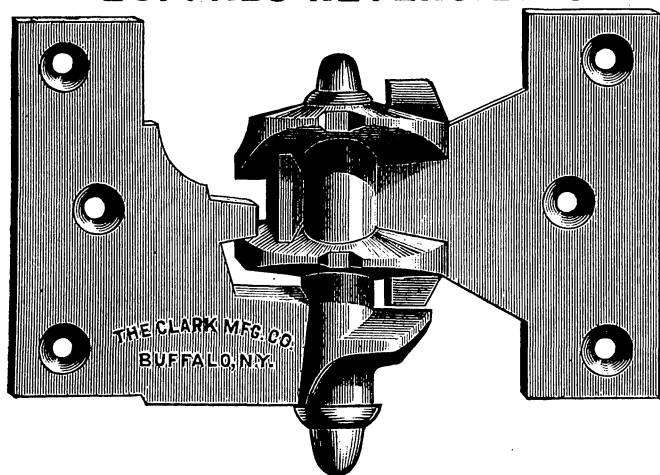
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Full Size Cut of "Cottage" No. 1.

Small duplicate of our old pattern No. 1 but  
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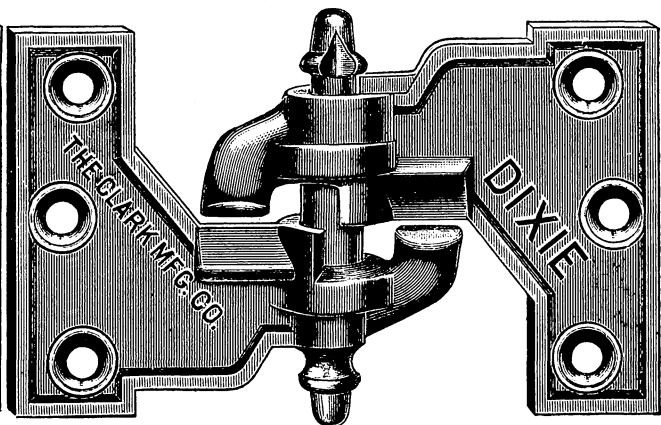
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Packed with No. 2 Shutter Fastening. We make Nos. 3, 2,  
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We make Nos. 3, 2½, 2, 1½, 1, 0 and 00 sizes.

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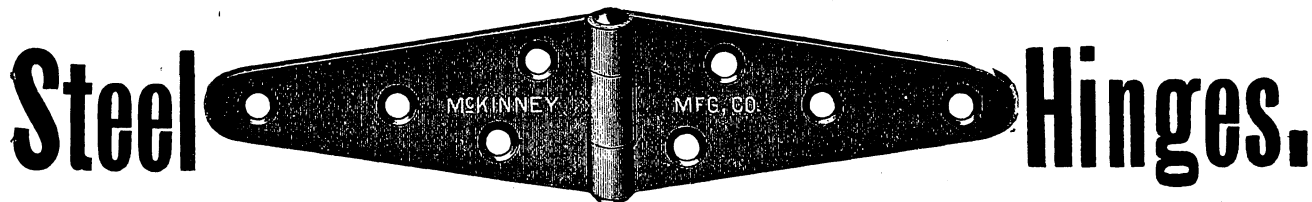
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# WE CLAIM

That one pair of our Celebrated Steel Hinges will outwear two pair of the Flimsy Invention now being forced upon the attention of the trade.

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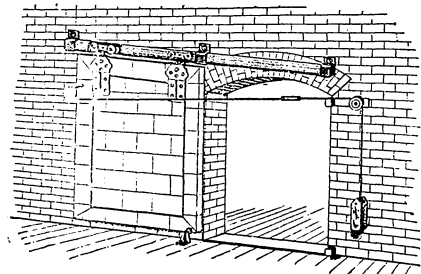
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Parlor, Barn and Fire Door  
Hangers.

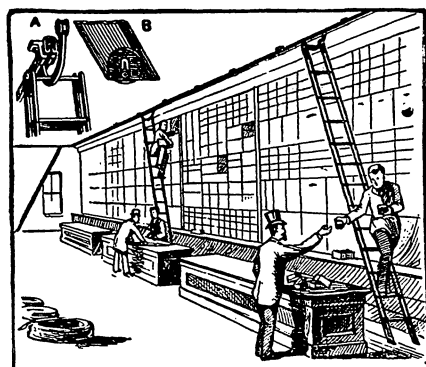
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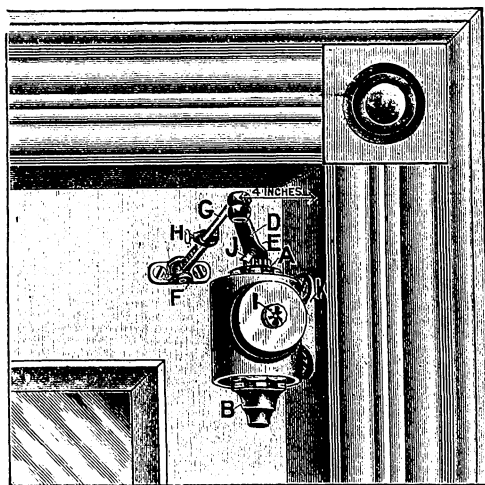
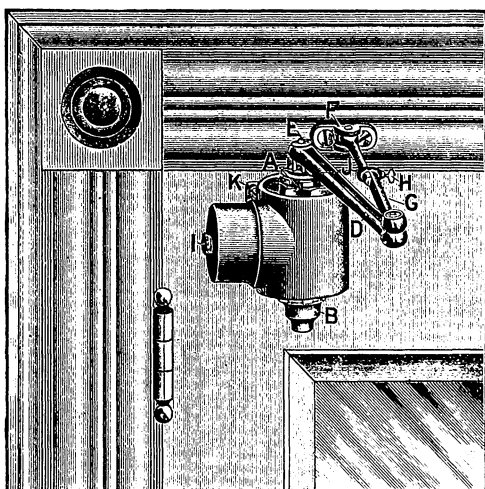
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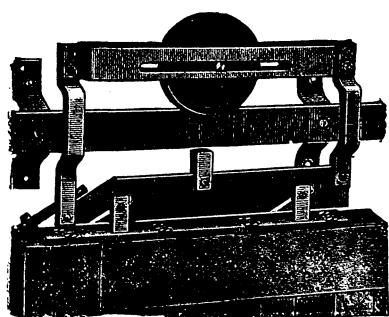


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## LANE'S PATENT NOISELESS STEEL PARLOR DOOR HANGER.

This Hanger is made of Steel.  
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The Hanger is Anti-Friction.  
More nearly Noiseless than any other.  
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Can be erected with half the labor others require.  
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No cutting of doors.  
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Simplicity in all its parts.  
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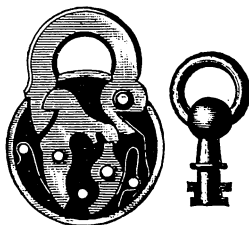
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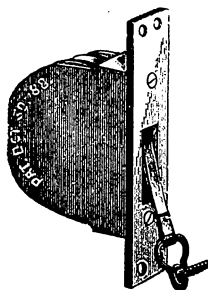


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Sizes,  $\frac{1}{4}$  inch to  $2\frac{1}{4}$  inches, of cast bronze. Defies competition for quality and price. No steel or iron used, cannot rust, and cannot be picked. Also,  $\frac{1}{2}$  and  $\frac{3}{4}$  inch Padlocks, opened with a common pin, in brass and nickel, for cats and small dogs. The best Railroad Switch and Car Lock in the world.  
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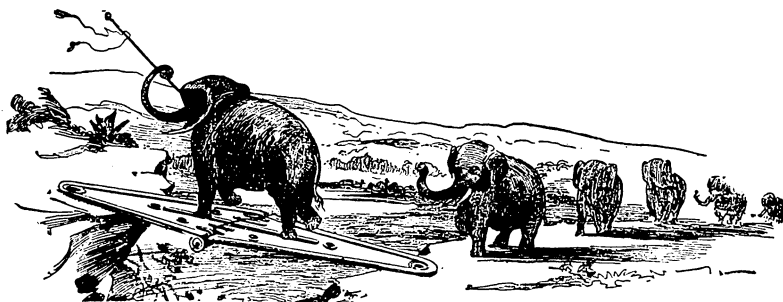
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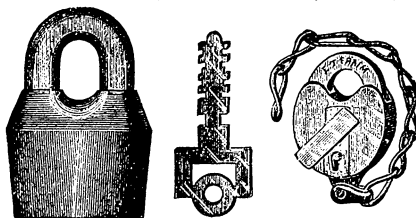
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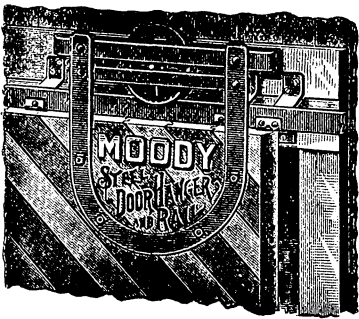
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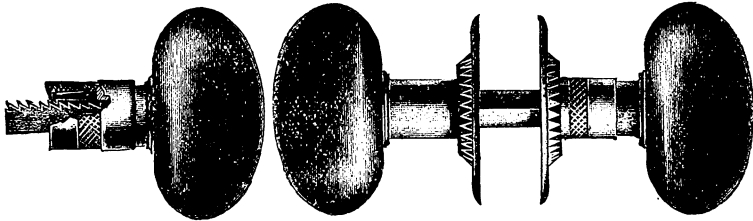
Showing one-half set of hangers attached to door.



The Only Bracing Bracket Made.

PRICE-LIST.		Per Doz. prs.
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No. 5, to run 6 feet, 3 1/4 in. wheel,	-	\$10.00
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Sectional cut showing construction of Knob.



Half size cut of knob as applied to door. No side screws or adjusting washers.

**The Whipple Patent Door Knob.** Patented Nov. 7th, 1893, other Patents pending. Constructed on an entirely new principle neither expensive nor complicated. Secures perfect adjustment to doors with strength and durability. Use it and avoid the disagreeable end chace and general looseness of the ordinary knob. For Catalogue and Price-List address **THE PERRY & WHIPPLE CO.** New Haven, Ct.

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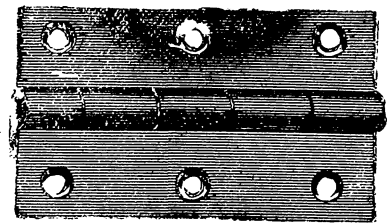
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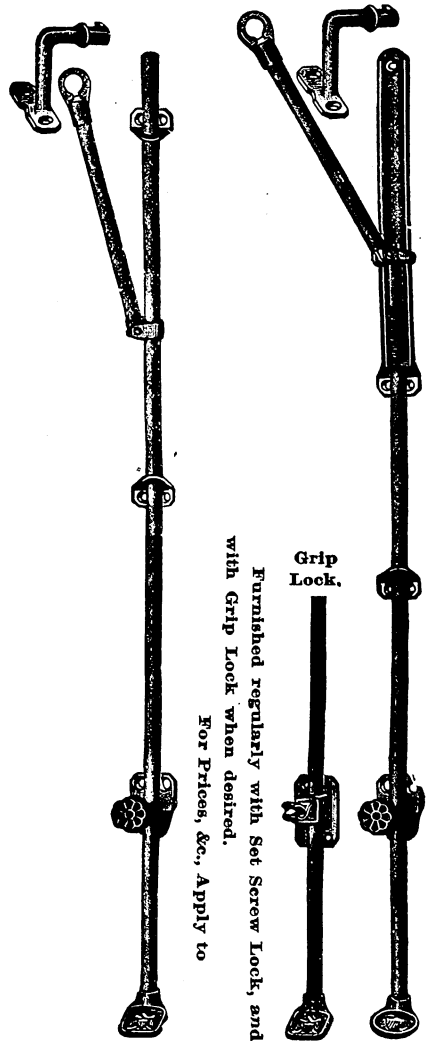
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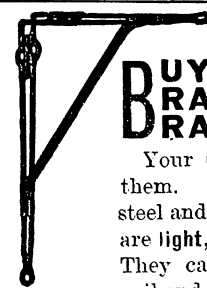
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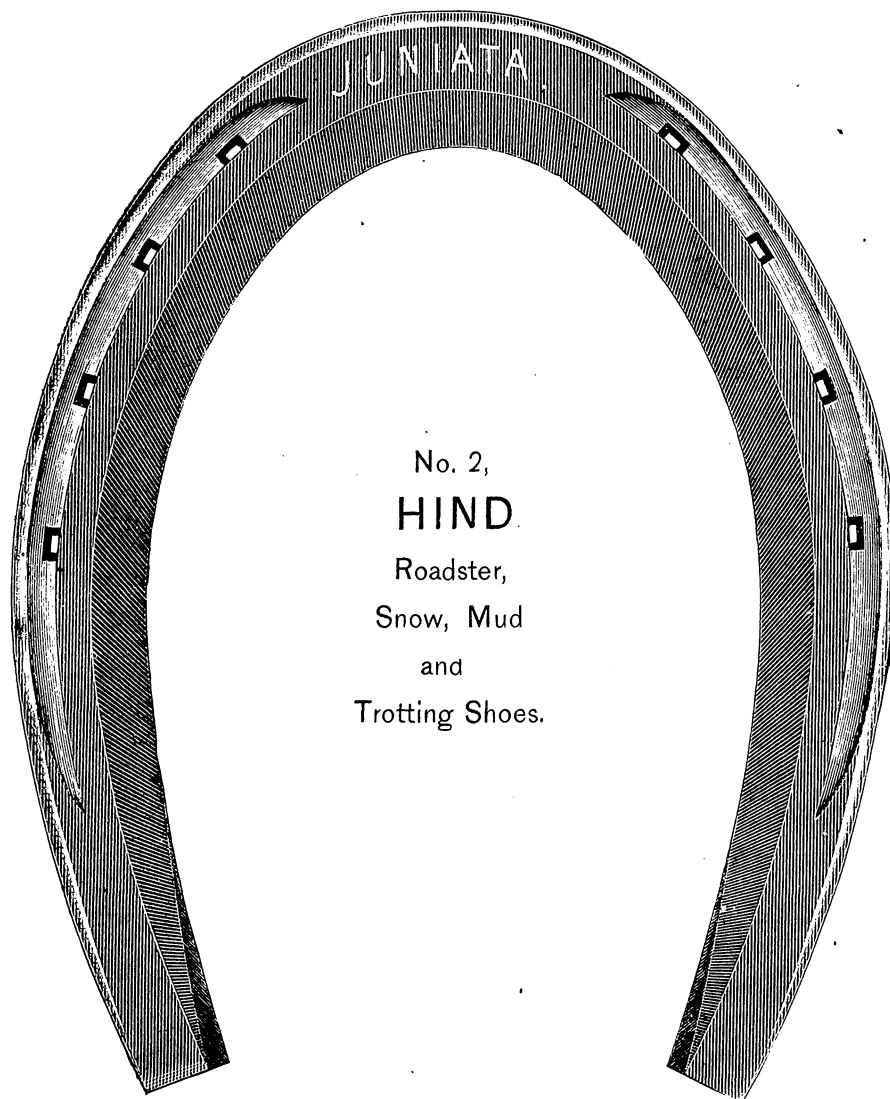
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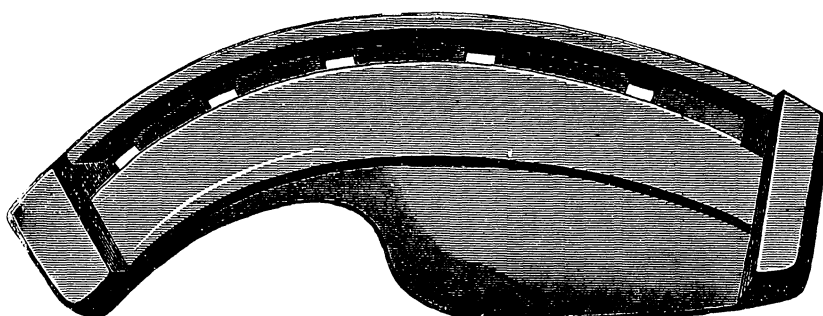
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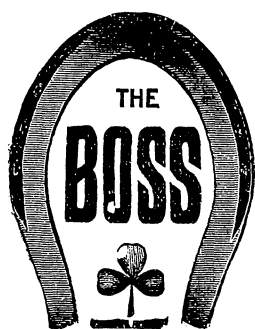
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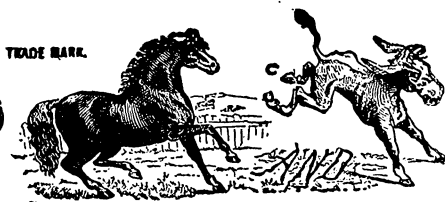
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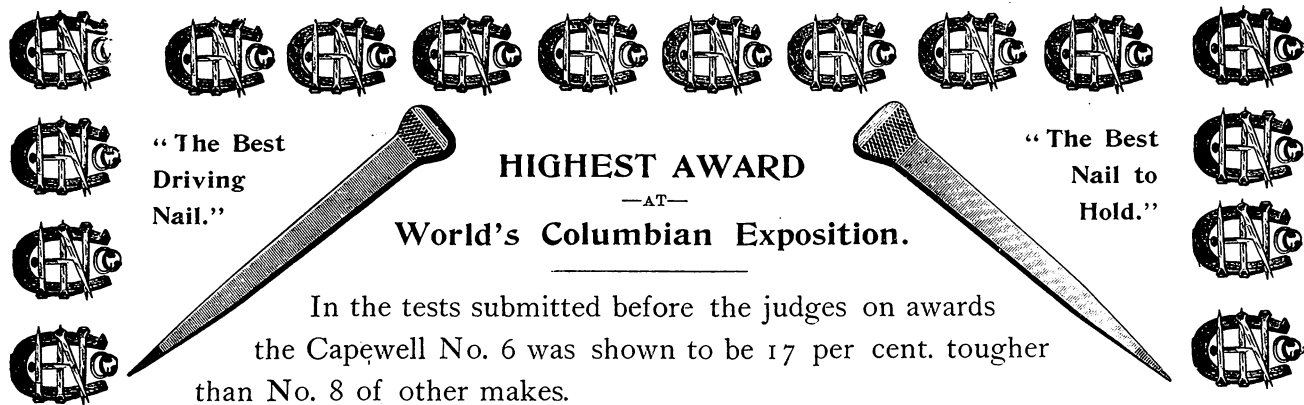
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“The Best Nail to Hold.”



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Gentlemen—I have used your horse nails here on the horses belonging to the World's Columbian Exposition, and I think they are far superior to any others that I have ever used. As I have been in the horseshoeing business for about twenty-five years, I know what I am talking about.

Very respectfully,  
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Needs No Clinching.

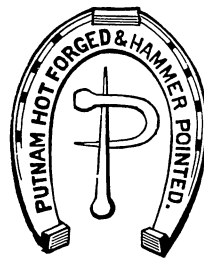
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## The PUTNAM Hot-Forged and Hammer-Pointed Horse NAILS,



At the *World's Columbian Exposition* at Chicago. A medal and diploma worded:

*“Supreme excellence in material, method in manufacture, and quality of finished product; elasticity and smoothness combined with holding power in clinch. It allows the use of very small nails.”*

There is nothing beyond “supreme excellence,” nor is there anything comprised in a horse nail, except the “material from which it is made,” “the method of manufacture,” and “quality of finished product.”

Putnam nails, by their “elasticity,” give slightly to the expansion and contraction of the hoof while the horse is in motion; by their “smoothness,” do not enlarge the nail holes in the hoof, while their “supreme excellence,” in “holding power in the clinch,” enables them to hold the shoe in the hardest service until worn out.

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WITH STEEL SCREWS.

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Points Hardened.

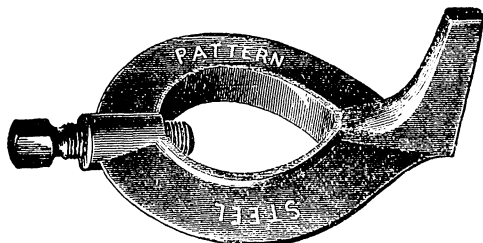
No.	Inch.	Price.	No.	Inch.	Price.
1.....	3/8.....	\$0 35	7.....	1 3/4.....	\$1 00
2.....	3/8.....	35	8.....	2.....	1 10
3.....	3/4.....	60	9.....	2 1/2.....	1 40
4.....	1.....	60	10.....	3.....	1 50
5.....	1 1/4.....	75	11.....	3 1/2.....	1 70
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Small set of 8, \$5.50. Full set of 12, \$12

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**Horse and Mule Shoes,  
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Cut One-half Size.  
Sample pair sent to any hardware or saddlery firm by addressing

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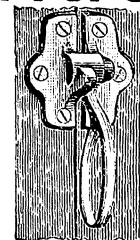
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**Refrigerator Door**

**Fasteners**

Have rapidly supplanted all others.

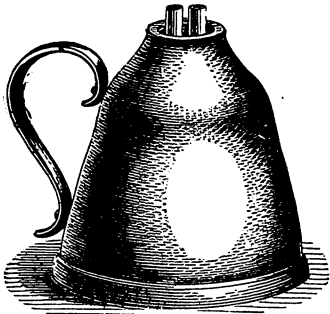
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Hammer's Adjustable Clamps.  
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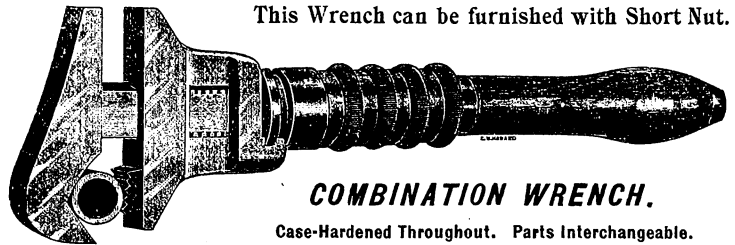
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This Wrench can be furnished with Short Nut.

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Case-Hardened Throughout. Parts Interchangeable.

This wrench not only combines the superior qualities of a Gas Pipe Wrench but also all the  
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Superior in strength and ease of operation.  
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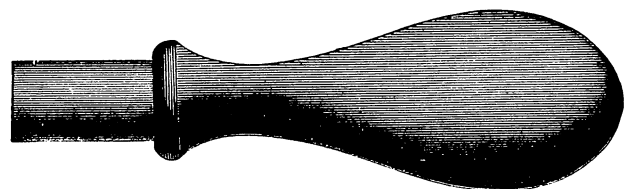
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than any other Basin  
Wrench. Parts Interchange-  
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Box and Track  
Wrenches.



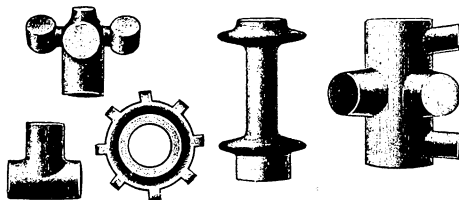
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New and Improved Model. Six Sizes. Send for Price-List to

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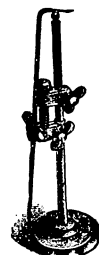
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Thumbscrews, and Iron, Steel, Copper and Bronze Drop Forgings of every description.



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**DROP FORGINGS**

*Billings' Patent Surface Gauge.*

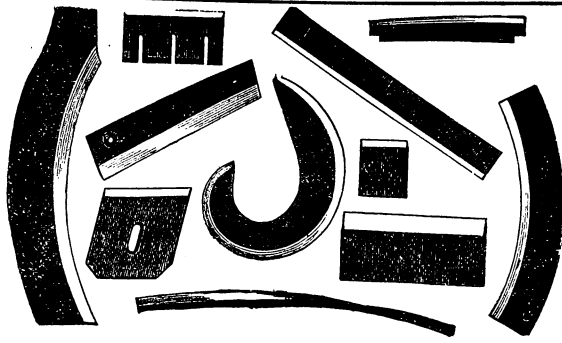


*This Surface Gauge is drop forged, of bar steel,  
and finished in a thorough  
manner, and hardened.*

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Price List of Machinists' Tools . .

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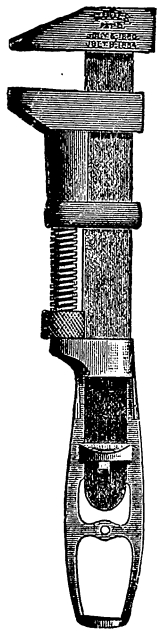
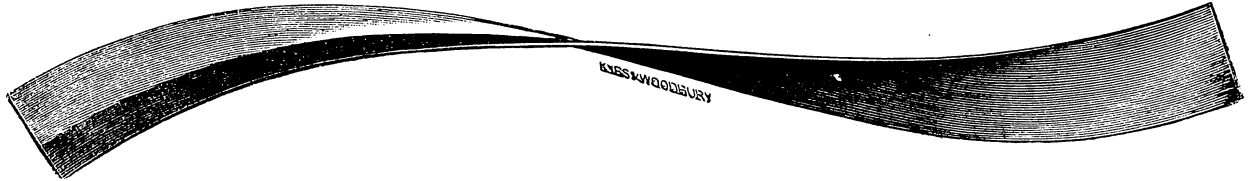
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Shear Blades and Strips, Moulding Cutter Plate, Die Stock for Leather, Cloth and Paper Cutting Dies. Lawn Mower and Hay Cutter Knives of every description.

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Genuine Improved  
**KNIFE HANDLE  
PATENT**

## Screw Wrenches

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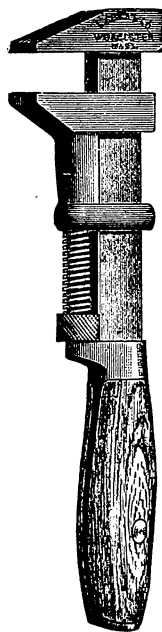
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Patented July  
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Sectional View Illustrates our New Knife Handle, showing Malleable Iron Frame and Shank of Bar keyed into position.

17 Straight Bar, Extra Long Nut for Screw in Jaw. 21

The **BEST MADE** and **STRONGEST WRENCH** in the MARKET.

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FOR ANTHRACITE AND  
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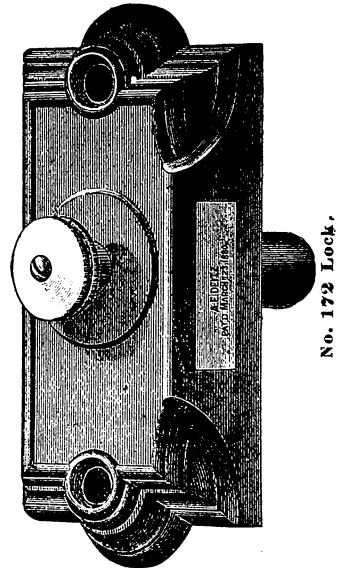
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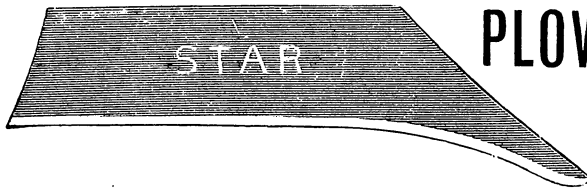
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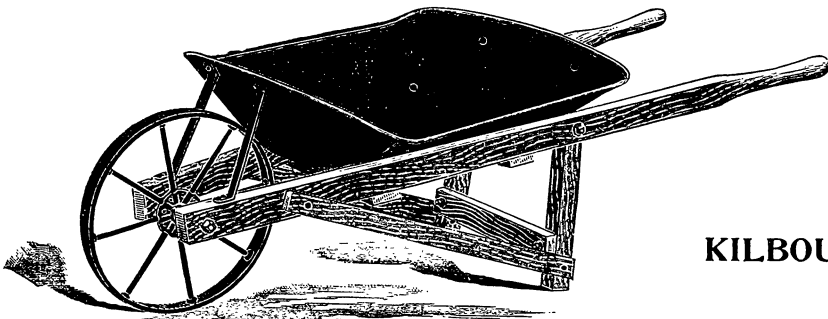


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**LANSING WHEELBARROW CO.**  
LANSING, MICH.

*CHEAP work is almost invariably a swindle. To those who have discovered this, and are inclined to favor good productions, we invite their patronage.*

THE BEST  
WHEELBARROWS,  
SCRAPERS,  
STEEL SINKS,  
TRUCKS and WAGONS  
ARE MADE BY



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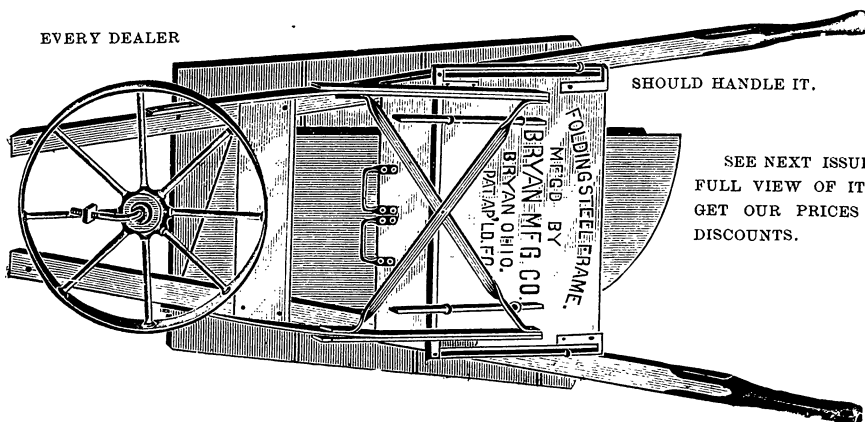
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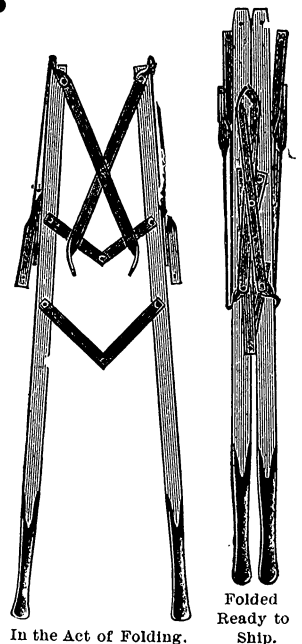
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SHOULD HANDLE IT.

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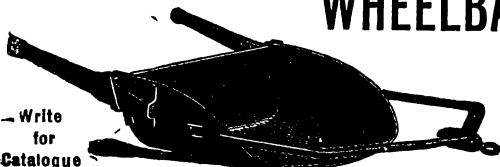
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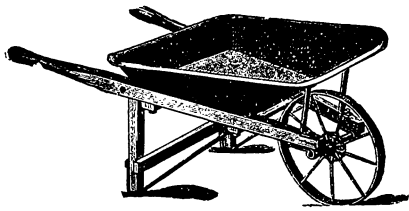
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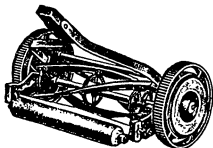
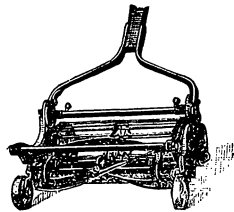
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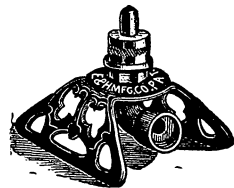
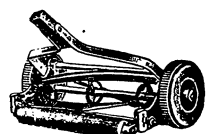
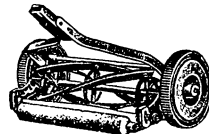


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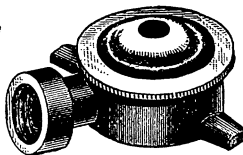


Japanese No. 12,  
Adjust.

## LAWN SPRINKLERS.

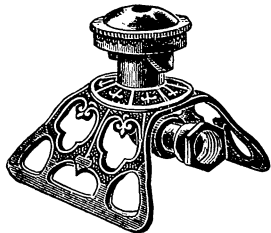
We manufacture the BEST and CHEAPEST Lawn Sprinklers in the World.

Cactus No. 8.



The only Sprinklers which have no revolving parts to leak or wear out.  
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The only Sprinklers which are adjustable and will give a spray as fine as the mist of Niagara, or as heavy as the area of the supply pipe.

The best Sprinklers for high pressures, and the only sprinklers which will give satisfaction with low pressures.  
We also manufacture the old style revolving sprinklers, but for our own use would not have them

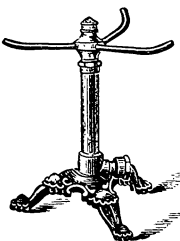


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## LITTLE GIANT

## Traveling Lawn Sprinkler.

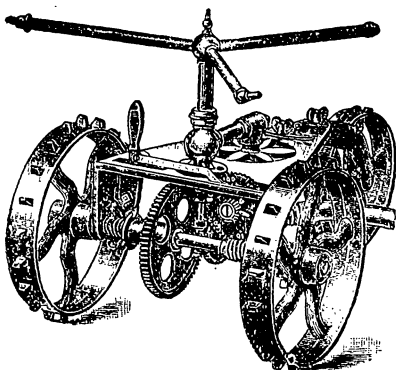
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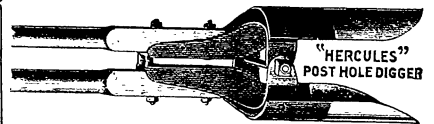
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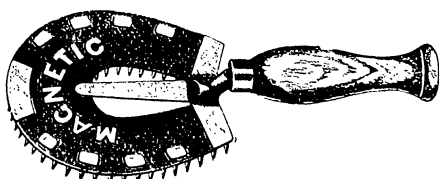
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Absolutely a Self-Cleaner.

Produces a healthy action of the skin. Made of Magnetic Metal, the effect of which is to soothe.

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POTATO HOES.  
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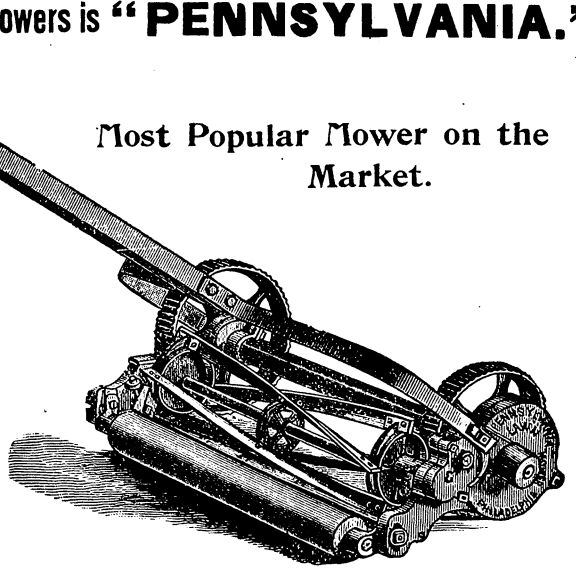
A. B. FARQUHAR, Executive Commissioner.

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**Supplee Hardware Co.,**

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Most Popular Mower on the Market.



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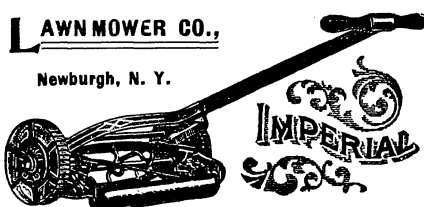
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The Lightest Running Mower in the World.

This is the only Lawn Mower that stood the test of working the entire season on the Columbian Exposition Grounds without any repairs.

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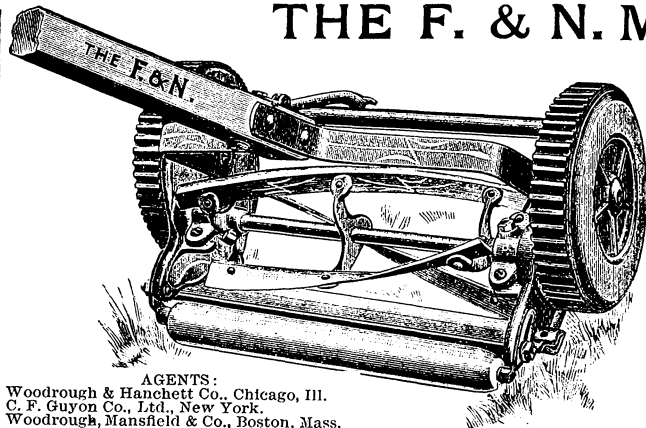
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MOWER  
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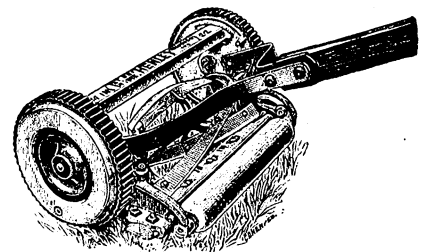
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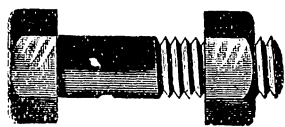
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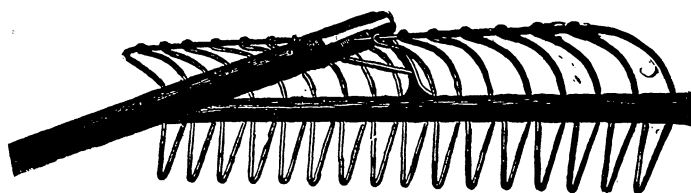
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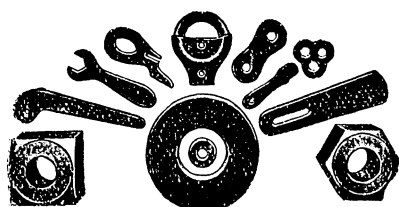
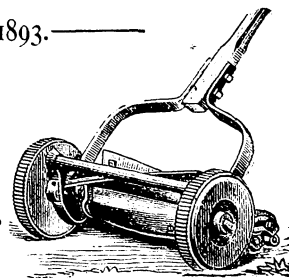
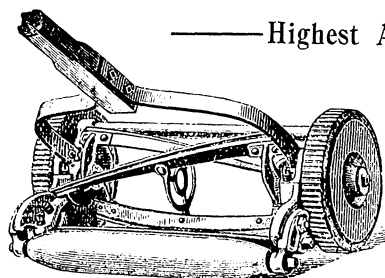
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SUITABLE FOR MACHINERY  
OF ALL KINDS.



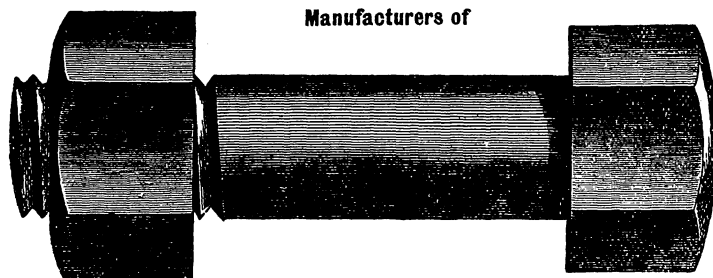
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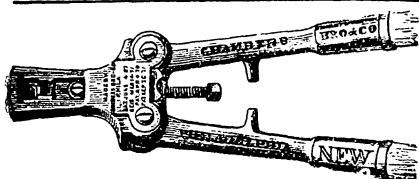
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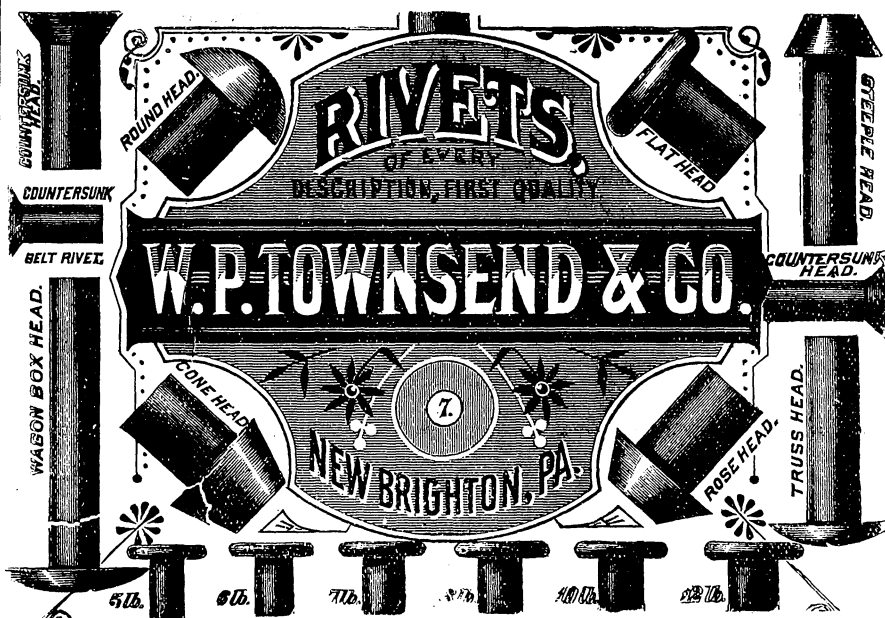
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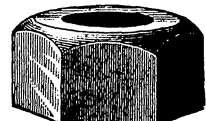
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Britton, J. Blodgett Philadelphia, Pa.  
Moore, Dr. Gideon E., 221 Pearl St., N. Y.

**Anti-Friction Metals.—See Babbitt Metal.**

**Anvil and Vise (Combination).**  
Fulton Iron & Engine Works, Detroit, Mich.

**Apple Parers.**  
Goodell Co., Antrim, N. H.

**Arms and Ammunition.**  
Hardley & Graham, 313 & 315 Broadway, New York.  
Ideal Mfg. Co., New Haven, Conn.  
Stevens, J., Arms and Tool Co., Chicopee Falls, Mass.  
Union Metallic Cartridge Co., 313 & 315 Broadway, N. Y.

**Auctioneers.**  
Bissell, E. Son & Co., N. Y.

**Axes.**  
Peck, A. G. & Co., Cohoes, N. Y.

**Axles, Springs, &c.—Manufacturers of.**  
Gautier Steel Dept. of Cambria Iron Co., Johnstown, Pa.  
Wurster, F. W. & Co., Brooklyn, N. Y.

**Babbitt Metal.**  
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.  
Crown Smelting Co., Chester, Pa.  
Hertz, T. & Son, St. Louis, Mo.  
Keys, W. W. & R. M. Co., Bridgeport, Conn.  
Reeves, Paul S., Philadelphia, Pa.

**Bakers and Roasters.**  
Bronson Supply Co., Cleveland, Ohio.

**Sale Ties.**  
Kilmer Mfg. Co., Newburg, N. Y.

**Sand Saw Machines.**  
Cross & Speirs Machine Co., Waterbury, Conn.

**Barb Wire and Fence.**  
Gautier Steel Dept. of Cambria Iron Co., Johnstown, Pa.  
Indiana Wire Fence Co., Crawfordsville, Ind.  
Kilmer Mfg. Co., Newburg, N. Y.  
Ludlow-Saylor Wire Co., St. Louis, Mo.  
Washburn & Moen Mfg. Co., Worcester, Mass.

**Bar Iron, Manufacturers of.**  
Etna-Standard Iron & Steel Co., Bridgeport, Conn.  
Allentown Rolling Mill, Allentown, Pa.  
Burden Iron Co., Troy, N. Y.  
Crescent Horse Shoe & Iron Co., Max Meadows, Va.  
Montour Iron & Steel Co., Danville, Pa.  
Mahoning Valley Iron Co., Youngstown, Ohio.  
Sternbergh, J. H. & Son, Reading, Pa.

**Bellows, Manufacturers of.**  
Bullock Bellows Co., Cleveland, O.  
Scott, Geo. M., Chicago, Ill.

**Bells.**  
Bevin Bros. Mfg. Co., East Hampton.

**Belt Dressing.**  
Jos. Dixon Crucible Co., Jersey City, N. J.

**Belt Fasteners.**  
Bristol Co., Waterbury, Conn.  
Claffen Mfg. Co., Cleveland, Ohio.  
Talcott, W. O., Providence, R. I.

**Belting, Makers of.**  
Alexander Bros., 412 N. 3d., Phila.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Engineering Co., Phila., Pa.  
Main Belting Co., Philadelphia, Pa.  
N. Y. Belting & Packing Co., Ltd., N. Y.  
Roberts Mfg. Co., Pittsburgh, Pa.  
Shultz Belting Co., St. Louis, Mo.

**Bending Rolls.**  
Wickes Bros., Saginaw, Mich.

**Bicycles.**  
Eagle Bicycle Mfg. Co., Torrington, Ct.  
Grand Rapids Cycle Co., Grand Rapids, Mich.  
Lovell, Jno. P. Arms Co., Boston, Mass.  
Monarch Cycle Co., Chicago, Ill.

Pope Mfg. Co., Boston, Mass.  
Read, Wm. & Sons, Boston, Mass.  
Sterling Cycle Works, Chicago, Ill.  
Western Wheel Works, Chicago, Ill.

**Bicycle Parts.**  
New Britain Hdw. Mfg. Co., New Britain, Conn.

**Bits and Braces.**  
Mason & Parker, Winchendon, Mass.

**Blocks, Tackle, Makers of.**  
Cleveland Block Co., Cleveland, O.  
Fulton Iron & Engine Works, Detroit, Mich.

**Blowers.**  
Buffalo Forge Co., Buffalo, N. Y.  
Champion Blower & Forge Co., Lancaster, Pa.  
Sturtevant, B. F. & Co., Boston, Mass.

**Boiler Plates.**  
Carbon Steel Co., Pittsburgh, Pa.  
Melvain, Wm. & Sons, Reading, Pa.  
Lukens Iron & Steel Co., Coatsville, O.  
Pottstown Iron Co., Pottstown, Pa.

**Boilers, Copper.**  
Randolph & Clowes, Waterbury, Conn.

**Boilers, Steam.**  
Sabcock & Wilcox Co., 30 Cortlandt, Edge Moor Iron Co., Wilmington.  
Harrison Safety Boiler Wks., Phila., Pa.  
Phoenix Iron Works Co., Meadville, Pa.  
Pollock, W. B. & Co., Youngstown, O.  
Southward Fdy. & Mch. Co., Phila., Pa.  
Sterling Co., Chicago, Ill.  
Wetherill, Robt. & Co., Chester, Pa.

**Bolt Cutters.**  
Chambers Bros. Co., Philadelphia.  
Howard Iron Works, Buffalo, N. Y.  
Reece, Edw. F., Greenfield, Mass.  
Wells Bros. Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.

**Books.**  
Williams, David, 96-102 Reade N. Y.  
Wolcott & West, Syracuse, N. Y.

**Boring Machines.**  
Buckeye Mfg. Co., Union City, Ind.

**Boxes, Hdw. Shelf, &c.**  
Green, A. H., 22 Park Place, N. Y.  
Jones, Jesse & Co., Philadelphia, Pa.

**Brackets.**  
Atlas Mfg. Co., New Haven, Conn.

**Brass, Manufacturers of.**  
Ansonia Brass & Copper Co., N. Y.  
Davol, John & Sons, 100 John, N. Y.  
Plume & Atwood Mfg. Co., N. Y.  
Randolph & Clowes, Waterbury, Conn.  
Rome Brass & Copper Co., Rome, N. Y.  
Socovill Mfg. Co., Waterbury, Conn.  
Waterbury Brass Co., 295 B'way, N. Y.

**Brass Butt Hinges.**  
Tiebout, W. & J., 16 & 18 Chambers.

**Brass Foundries.**  
Best, Fox & Co., Pittsburgh, Pa.  
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.  
Oramp, Wm. & Sons, S & E. B. Co., Philadelphia, Pa.  
Eynon-Evans Mfg. Co., Philadelphia, Pa.  
Fram, E. T., Lancaster, Pa.  
Haight & Clark, Albany, N. Y.  
Keys, W. W. & R. M. Co., Bridgeport, Conn.  
North Bros. Mfg. Co., Phila., Pa.  
Reeves, Paul S., Philadelphia.

**Brass Goods.**  
Brass Goods Mfg. Co., 38 Chambers.

**Bridge Builders.**  
Boston Bridge Works, Boston, Mass.  
Wrought Iron Bridge Co., Canton, O.

**Bronze (Tobin).**  
Ansonia Brass & Copper Co., 19-26 Cliff Street, N. Y.

**Builders' Hardware.**  
Corbin, P. & F., New Britain, Conn.  
Deitz, A. E., 97 Chambers St., N. Y.  
Reading Hdw. Co., Reading, Pa.  
Yale & Towne Mfg. Co., Stamford, Ct.

**Butchers' Steels.**  
Chatillon, John & Sons, 85-89 Cliff St., N. Y.  
Hoffman, C. & A., Philadelphia, Pa.

**Butcher and Shoe Knives, Manufacturers of.**  
Chatillon, John & Sons, 85-89 Cliff St., N. Y.  
Goodell Co., Antrim, N. H.  
Wilson, John, Sheffield, England.

**Butts and Hinges.**  
Clark Mfg. Co., Buffalo, N. Y.  
McKinney Mfg. Co., Allegheny, Pa.  
Sabin Machine Co., Montpelier, Vt.  
Stanley Works, New Britain, Conn.  
Tiebout, W. & J., 16 Chambers, N. Y.

**Cutters and Dividers.**

J. Stevens Arms and Tool Co., Chicopee Falls, Mass.  
Starrett, L. S., Athol, Mass.

**Car Axles.**  
Roberts, A. & P. & Co., Phila.

**Carboy Stands.**  
Hillebrand & Wolf, Philadelphia, Pa.

**Carriage Hardware, Makers of.**  
Covert's Saddlery Works, Farmer, N. Y.  
Eccles, Richard, Auburn, N. Y.  
Scranton Forging Co., Scranton, Pa.  
Smith, H. D. & Co., Plantville, Conn.  
Wilcox & Howe Co., Birmingham, Conn.

**Cartridge Reloading Tools.**  
Ideal Mfg. Co., New Haven, Conn.

**Cash Registers.**  
Sun Mfg. Co., Greenfield, O.

**Chasters, Wheel, &c.**  
Clark, G. P., Windsor Locks, Conn.

**Castings, Iron and Steel.**  
Booth, The Lloyd Co., Youngstown, O.  
The Burr & Houston Co., Brooklyn, N. Y.  
Cheney, S. & Son, Manlius, N. Y.  
Chester Steel Casting Co., Phila.  
Chrome Steel Works, Brooklyn, N. Y.  
Eureka Cast Steel Co., Chester, Pa.  
Flagg, Stanley G. & Co., Phila.  
Garland Foundry Co., Cleveland, O.  
Haight & Clark, Albany, N. Y.  
Mahoning Foundry & Mch. Co., Danville, Pa.  
Palmer & De Mooy, Cleveland, O.  
Pratt & Cady Co., Hartford, Conn.  
Sessions Foundry Co., Bristol, Conn.  
Spencer's, I. S., Sons, Guilford, Conn.  
Standard Fdy. & Mfg. Co., Cleveland, O.  
Standard Steel Casting Co., Thurlow, Pa.

**Totten & Hogg Iron & Steel Fdry Co., Pittsburgh, Pa.**  
Western Fdy. Co., Chicago, Ill.  
Wetherill, Robt. & Co., Chester, Pa.

**Castings, Malleable.**  
Arcade Malleable Iron Co., Worcester, Mass.  
Burgess & Loxley, Buffalo, N. Y.  
Dayton Malleable Iron Co., Dayton, O.  
Hammer & Co., Branford, Conn.  
Woodruff, W. W. & Sons, Mt. Carmel, Conn.

**Chains.**  
Bradley & Co., Philadelphia.  
Link-Belt Engineering Co., Phila. Pa.  
McKay, Jas. & Co., Pittsburgh, Pa.

**Chimneys.**  
Phila. Engineering Works, Phila., Pa.

**Chisels, Manufacturers of.**  
Suck Bros., Millbury, Mass.  
White, L. & I. J. Co., Buffalo, N. Y.

**Chucks.**  
Cushman Chuck Co., Hartford, Conn.  
Hogson & Pettis Mfg. Co., New Haven.  
Smith & Egge Mfg. Co., Bridgeport.  
Union Mfg. Co., 108 Chambers, N. Y.  
Whitlock, Wm., 39 Cortlandt St., N. Y.  
Whitton, D. E. Mach. Co., New London, Conn.

**Clamps.**  
Hammer & Co., Branford, Conn.  
Le Count, C. W., So. Norwalk, Conn.

**Clipping Machines.**  
McCoy, Jos. F. & Co., 26 Warren St.

**Coal.**  
Barns, C. K. & Co., Philadelphia, Pa.  
Wister, Francis, Philadelphia, Pa.

**Coke.**  
Barns, C. K. & Co., Philadelphia, Pa.  
Houston, O. B. & Co., Philadelphia, Pa.  
Rainey, W. J., Cleveland, O.  
Wister, Francis, Philadelphia, Pa.

**Collections.**  
Hardware Board of Trade (Limited) 4 and 6 Warren, N. Y.

**Condensers.**  
Worthington, Henry R., 36 & 38 Liberty Street, N. Y.

**Conveying Machinery.**  
Brown Holsting & Conveying Machine Co., Cleveland, Ohio.  
Jeffrey Mfg. Co., Columbus, O.  
Link-Belt Engineering Co., Phila., Pa.

**Copper.**  
Ames Sword Co., Chicopee, Mass.  
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.  
Hendricks Bros., 49 Cliff, N. Y.  
New Haven Copper Co., 204 Pearl N. Y.  
Randolph & Clowes, Waterbury, Conn.  
Rome Brass & Copper Co., Rome, N. Y.  
Wister, Francis, Philadelphia, Pa.

**Cordage.**  
Samson Cordage Works, Boston, Mass.

**Cork Screws.**  
Williamson, C. T. Wire Novelty Co., Newark, N. J.

**Corrugated Furnaces.**

Continental Iron Wks, Brooklyn, N. Y.

**Corrugated Iron.**  
Cincinnati Corrugating Co., Piqua, O.  
Cambridge Roofing Co., Cambridge, Mass.  
Moseley Iron Bridge & Roof Co., 5 Dey N. Y.  
N. Y. Iron Roofing & Corrugating Co., Jersey City, N. J.

**Counting Machines.**  
Durant, W. N., Milwaukee, Wis.

**Coupling.**  
Almond, T. R., Brooklyn, N. Y.

**Coverings, Boiler and Pipe.**  
Johns, H. W. Mfg. Co., 87 Malden Lane.

**Cranes.**  
Detroit Foundry Equipment Co., Detroit, Mich.  
Halsey, W. S. & Co., Birdsboro, Pa.  
Harrington, E. Son & Co., Phila., Pa.  
Maris & Beekley Philadelphia, Pa.  
Ridgway, Craig & Sons, Coatesville, Pa.  
Sellers, Wm. & Co., Inc., Phila., Pa.  
Yale & Towne Mfg. Co., Stamford, Conn.

**Credits.**  
Ealy, Jno. W. Co., 273-280 B'way, N. Y.

**Cupolas, Hot-Blast.**  
Colliau, Victor, Detroit, Mich.  
Detroit Fdry. Equipment Co., Detroit, Mich.

**Curry Combs.**  
Gibbs Mfg. Co., Canton, O.

**Cutlery Cases.**  
Torrey, J. R. & Co., Worcester, Mass.

**Cutlery, Importers of.**  
Field, Alfred & Co., 93 Chambers St., New York.  
Gurney, Fred B., 116 Chambers St., N. Y.  
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

**Cutlery, Manufacturers of.**  
Singham, W. Co., Cleveland, Ohio.  
Dane, Stoddard & Kendall, Boston, Mass.  
Electric Cutlery Co., 113 Chambers, N. Y.  
Goodell Co., Antrim, N. H.  
Northampton Cutlery Co., Northampton, Mass.  
Wilson, John, Sheffield, England.

**Cyclometers.**  
Bridgeport Gun Implement Co., 319 315 Broadway, N. Y.

**Dies.**  
Wilson, J. Fred, Worcester, Mass.

**Die Forgings and Castings.**  
Bliss, E. W. Co., Brooklyn, N. Y.

**Door Checks and Springs.**  
Bardaley, J., 149 & 151 Baxter St., w. v. Corbin, P. & F., New Britain, Conn.

**Door Knobs.**  
Perry & Whipple Co., New Haven, Ct.

**Drain Cleaners.**  
Buckeye Mfg. Co., Union City, Ind.

**Drawing Instruments.**  
Keuffel & Esser Co., 127 Fulton St., N. Y.

**Drilling Machines.**  
Bickford Drill & Tool Co., Cin., Ohio.  
Buffalo Forge Co., Buffalo, N. Y.  
Champion Blower and Forge Co., Lancaster, Pa.  
Colburn, A. M., New Haven, Conn.  
Dallett, Thos. H. & Co., Philadelphia.  
Dwight Slate Machine Co., Hartford, Conn.  
Halsey, Jas. T., Philadelphia, Pa.  
Hamilton Mch. Tool Co., Hamilton, N. Y.  
Norton & Jones Machine Tool W Co., Plainville, Conn.  
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.  
Quint, A. D., Hartford, Conn.  
Sellers, Wm. & Co., Inc., Phila., Pa.  
Sigourney Tool Co., Hartford, Conn.  
Silver Mfg. Co., Salem, O.

**Drop Forgings.**  
Becken Iron Co., New Haven, Conn.  
Billings & Spencer Co., Hartford, Conn.  
Boone, W. C. Mfg. Co., Boonton, N. J.  
Eccles, Richard, Auburn, N. Y.  
Merrill Bros., Brooklyn, N. Y.  
Miner & Peck Mfg. Co., New Haven, Ct.  
Phila. Drop Forge Co., Philadelphia, Pa.  
Scranton Forging Co., Scranton, Pa.  
Spiers, J. C. & Co., Worcester, Mass.  
Williams, J. H. & Co., Brooklyn, N. Y.  
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.  
Wyman & Gordon, Worcester, Mass.

**Drop Presses.**  
Bliss, E. W. Co., Brooklyn, N. Y.  
Croby, G. A. & Co., Chicago, Ill.  
Giner & Peck Mfg. Co., New Haven, Conn.  
Stiles & Parker Press Co., Brooklyn, N. Y.

See Alphabetical Index, Pages 95 & 96.

**Vulcan Iron Works, Chicago, Ill.**  
Waterbury, Farrell Foundry and Machine Co., Waterbury, Conn.

**Dumb Waiters.**  
Storm Mfg. Co., Newark, N. J.

**Dust Beaters.**  
Peabody & Parks, Troy, N. Y.

**Dynamite.**  
New York Powder Co., 62 Liberty St. N. Y.

**Dynos.**  
C. & C. Electric Co., 402 and 404 Greenwich St., N. Y.

**Edge Tools. Makers of.**  
Suck Bros., Millbury, Mass.  
Plumb, Fayette R., Philadelphia, Pa.  
White, L. & I. J. Co., Buffalo, N. Y.

**Edging Shears.**  
Dille & McGuire Mfg. Co., Richmond, Ind.

**Egg Beaters.**  
North Bros. Mfg. Co., Philadelphia.

**Electric Bells and Supplies.**  
Ostrander, W. R. & Co., 204 Fulton St., New York  
Wollensak, J. F., Chicago, Ill.

**Elevators, Makers of.**  
Link-Belt Engineering Co., Phila., Pa.  
Morse, Williams & Co., Phila., Pa.

**Emery and Emery Wheels.**  
Bell, Geo. E., 36 John St., N. Y.  
N. Y. Belting & Packing Co., Ltd., N. Y.  
Northampton Emery Wheel Co., Leeds, Mass.  
Norlon Emery Wheel Co., Worcester, Mass.  
Sterling Emery Wheel Co., 174 Fulton St., New York  
Sturtevant Mill Co., Boston, Mass.

**Emery Wheel Dressers.**  
Bay State Stamping Co., Worcester, Mass.

**Enamels.**  
Nubian Iron Enamel Co., Cragin, Ill.

**Engineers and Contractors.**  
Aiken Henry, Pittsburgh, Pa.  
Artificial Gas Engineering Co., Pittsburgh, Pa.  
Herriek, J. A., 284 Pearl St., N. Y.  
Kennedy, Julian, Pittsburgh, Pa.  
Laughlin, Alex. & Co., Pittsburgh, Pa.  
Lean, D. B. Co., Pittsburgh, Pa.  
McClure, Amsler & Co., Pittsburgh, Pa.  
Pittsburgh Iron & Steel Engineering Co., Pittsburgh, Pa.  
Roberts, Frank C., Philadelphia, Pa.  
Smythe, S. B. Co., Incorporated Pittsburgh, Pa.  
Swindell, W. & Bros., Pittsburgh, Pa.

**Engines, Gas.**  
Otto Gas Engine Works, Phila., Pa.  
Rollason Gas Engine, Havemeyer Bldg., N. Y.

**Engines, Steam. Makers of.**  
Bass Foundry & Machine Works, Ft. Wayne, Ind.  
Buckeye Engine Co., Salem, O.  
Erie Engine Works, Erie, Pa.  
Norwalk Iron Works Co., So. Norwalk, Conn.  
Penna. Diamond Drill & Mfg. Co., Birdsboro, Pa.  
Phila. Engineering Works, Phila., Pa.  
Phoenix Iron Wks. Co., Meadville, Pa.  
Southwest Foundry and Machine Co., Phila., Pa.  
Tod, William & Co., Youngstown, O.  
Wetherill, Robt. & Co., Chester, Pa.

**Exhaust Tumblers.**  
Sweater, W. A., Brooklyn, Mass.

**Expansion Bolts.**  
Boone, W. C. Mfg. Co., Bonton, N. J.  
Church, Isaac, Toledo, O.  
Steward & Romaine Mfg. Co., Phila., Pa.

**Faucets, Self-Measuring.**  
Lane Bros., Poughkeepsie, N. Y.

**Faucets, Wooden. Makers of.**  
John Sommer's Son, Newark, N. J.

**Feed-Water Heaters.**  
Davis, I. B. & Son, Hartford, Conn.  
Goubert Mfg. Co., 32 Cortlandt St., N. Y.  
Harrison Safety Boiler Wks., Phila., Pa.  
National Pipe Bending Co., New Haven, Conn.  
Taunton Locomotive Mfg. Co., Taunton, Mass.  
Webster, Warren & Co., Camden, N. J.  
Whitlock Coil Pipe Co., Elmwood, Conn.

**Fencing, Iron and Wire.**  
Sarnum, E. T., Detroit, Mich.  
Champion Iron Co., Kenton, O.  
Clinton Wire Cloth Co., Clinton, Mass.  
Gilbert & Bennett Mfg. Co., 42 Cliff St., Kilmor, N. Y.  
Kilmer Mfg. Co., Newburgh, N. Y.  
Mast, Foss & Co., Springfield, O.  
The Van Dorn Iron Works Co., Cleveland, O.

**Files, Importers of.**  
Moss, F. W., 80 John, N. Y.

**Files and Rasps, Manufacturers of.**  
Arcade File Works, Anderson, Ind.  
Canker & White, Troy, N. Y.

**Barnett, G. & H., 41 & 43 Richmond Phila.**  
McCaffrey File Co., Philadelphia.  
Nicholson File Co., Providence R. I.

**Fire Brick, Makers of.**  
Horgner, Cyrus, Philadelphia, Pa.  
Gardner, Jas. & Son, Cumberland, Md.  
Kreischer & Sons, Foot E. Houston, St.  
McLeod & Henry Co., Troy, N. Y.  
Maurer, H. & Son, 420 E. 23d, N. Y.  
Ostrander Fire Brick Co., Troy, N. Y.  
Solomon, J. C. M., Wilmington, Del.  
Valentine, M. L. & Bro., Woodbridge.

**Fire Sets.**  
Troy Nickel Works, Troy, N. Y.

**Fishing Tackle.**  
Dams, Stoddard & Kendall, Boston, Mass.

**Flint.**  
Crystal Mills Co., Chester, Mass.

**Flint and Emery Paper.**  
Baeder, Adamson & Co., Phila., Pa.

**Flue Cleaners.**  
Mackey, Jas. T., St. Louis, Mo.

**Fodder Cutters.**  
Silver Mfg. Co., Salem, O.

**Forges, Portable, &c.**  
Snullock Bellows Co., Cleveland, O.  
Buffalo Forge Co., Buffalo, N. Y.  
Champion Blower & Forge Co., Lancaster, Pa.  
Sturtevant, B. F. Co., Boston, Mass.

**Forgings, Iron and Steel.**  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Cambria Steel-Cambria Iron Co., Johnstown, Pa.  
Eastern Forge Co., Boston, Mass.  
Frankford Steel Co., Phila., Pa.  
Scranton Forging Co., Scranton, Pa.  
U. S. Projectile Co., Brooklyn, N. Y.

**Foundry Facings.**  
A. Obermayer Co., Cincinnati, O.  
Smith, J. D. Fdy. Supply Co., Cincinnati, O.  
Solomon, Jno. M., Wilmington, Del.

**Foundry Middles.**  
Estey, W. S., 65 Fulton, N. Y.

**Foundry Supplies.**  
Collins, Victor, Detroit, Mich.  
Diamond Clamp & Flask Co., Richmond, Ind.  
A. Obermayer Co., Cincinnati, O.  
Smith, J. D. Fdy. Supply Co., Cincinnati, O.  
**Friction Clutches.**  
Keystone Clutch & Mch. Wks., Phila., Pa.  
Moore & White Co., Philadelphia, Pa.

**Friction Cone.**  
Evans Friction Cone Co., Boston, Mass.

**Gas Producers.**  
Wood, R. D. & Co., Philadelphia, Pa.

**Gas & Steam Fitters' Supplies.**  
Pancoast, Henry B. & Co., Phila., Pa.

**Gauge, Rolling Mill.**  
Haines Gauge Co., Philadelphia, Pa.

**Gear Cutters.**  
D. E. Whiton Mach. Co., New London, Conn.

**Gears.**  
Boston Gear Works, Boston, Mass.  
Gleason Tool Co., Rochester, N. Y.  
Roole, Robt. & Son Co., Baltimore, Md.  
U. S. Projectile Co., Brooklyn, N. Y.

**Glass Cutters.**  
Monroe, S. G., Bristol, Conn.

**Glass Tubes.**  
Ashcroft Mfg. Co., 111 Liberty St., N. Y.

**Glue.**  
Baeder, Adamson & Co., Phila., Pa.  
Dodd, A. W. & Co., Gloucester, Mass.  
Russia Cement Co., Gloucester, Mass.

**Grass Catchers.**  
Supplee Hardware Co., Phila., Pa.

**Grinding and Polishing Machines.**  
Norton Emery Wheel Co., Worcester, Mass.

**Grindstone Dressing Machinery.**  
Blake & Johnson, Waterbury, Conn.

**Grindstones.**  
Cleveland Stone Co., Cleveland, O.

**Gunpowder, Makers of.**  
Laffin & Rand Powder Co., 29 Murray St., N. Y.

**Hand Carts.**  
Lansing Wheelbarrow Co., Lansing, Mich.

**Handles.**  
New York Mallet and Handle Wks., 456 E. Houston St., N. Y.

**Hangers, Door.**  
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

**Lane Bros., Poughkeepsie, N. Y.**  
Victor Mfg. Co., Newburyport, Mass.

**Hardware Comm'n Merchants.**  
Doscher, Martin, 88 Chambers, N. Y.  
Field, Alfred & Co., 93 Chambers St., N. Y.  
Graham, John H. & Co., 111 Chambers St., New York  
Jacobus, W. H., 90 Chambers, N. Y.

**Hardware Manufacturers.**  
Stearns, E. C. & Co., Syracuse, N. Y.  
Union Mfg. Co., 103 Chambers, N. Y.  
Yale & Towne Mfg. Co., Stamford, Conn.

**Hardware Mfrs. Agents.**  
Bingham, W. Co., Cleveland, O.  
Clarke, Thomas, St. John, N. B.  
Graham, John H. & Co., 113 Chambers, N. Y.  
McCoy, Jos. F. Co., 26 Warren St., N. Y.  
Sickles, Sweet & Lyon, 35 Barclay, N. Y.

**Hardware Specialties.**  
Acme Shear Co., Bridgeport, Conn.  
Belden Machine Co., New Haven, Conn.  
Berger Bros., Philadelphia, Pa.  
Clark Mfg. Co., Buffalo, N. Y.  
Enterprise Mfg. Co., Philadelphia, Pa.  
Ette & Henger Mfg. Co., St. Louis, Mo.  
Haines & Zimmerman, Phila., Pa.  
Hart, H. C. Mfg. Co., Detroit, Mich.  
Johnson, S. C., Racine, Wis.  
Knapp & Cowles Mfg. Co., Bridgeport, Conn.  
New Britain Hdw. Mfg. Co., New Britain, Conn.  
North Bros. Mfg. Co., Philadelphia, Pa.  
Peabody & Parks, Troy, N. Y.  
Shepard, Sidney & Co., Buffalo, N. Y.  
Welland, Chas., 149 Chambers St., N. Y.  
Wilson, J. Fred, Worcester, Mass.

**Harness Snaps.**  
Covert Mfg. Co., West Troy, N. Y.  
Cort's Saddlery Wks., Farmer, N. Y.  
Fitch, W. & E. T., New Haven, Conn.

**Hay Knives.**  
Holt, Hiram, Co., E. Wilton, Me.

**Holisting Machines.**  
Box, Alfred & Co., 314 Green, Phila.  
Brown Holisting & Conveying Mch. Co., Cleveland, Ohio.  
Fulton Iron & Engine Wks., Detroit, Mich.

**Holisting.**  
Harrington, E., Son & Co., Phila.  
Lane Bros., Poughkeepsie, N. Y.  
Lidgerwood Mfg. Co., 96 Liberty, N. Y.  
Maris & Beekley, Philadelphia.  
Moore Mfg. & Fdy. Co., Milwaukee, Wis.  
Morse, Williams & Co., Phila.  
Sellers, Wm. & Co., Phila. and N. Y.  
Spindel, J. G., Reading, Pa.  
Yale & Towne Mfg. Co., Stamford, Ct.

**Hollow Ware.**  
Bronson Supply Co., Cleveland, Ohio.  
Cleveland Stamping & Tool Co., Cleveland, O.

**Hollow Ware, Aluminum.**  
Illinois Pure Aluminum Co., Lemont, Ill.

**Horse Nails, Makers of.**  
Capewell Horse Nail Co., Hartford, Conn.  
National Horse Nail Co., Vergennes, Vt.  
Putnam Nail Co., Neponset, Boston, Mass.

**Horse and Mule Shoes. Makers of.**  
Bryden Horse Shoe Co., Catsanqua, Pa.  
Burden Iron Co., Troy, N. Y.  
Crescent Horse Shoe & Iron Co., Max Meadows, Va.  
Diamond State Iron Co., Wilmington, Del.  
Old Dominion Iron & Nail Works Co., Richmond, Va.  
Phoenix Horse Shoe Co., Poughkeepsie, N. Y.  
Rhode Island Perkins Horse Shoe Co., Providence.

**Hose.**  
N. Y. Belting & Packing Co., Ltd., 15 Park Row, N. Y.

**Hydrants, &c.**  
McLean, John, 298 & 298 Monroe, N. Y.

**Hydraulic Forging.**  
U. S. Projectile Co., Brooklyn, N. Y.

**Hydraulic Jacks.**  
Dudgeon, Richard, 24 Columbia, N. Y.  
Watson & Stillman, 204 E. 43d, N. Y.

**Ice-Cream Freezers.**  
Clement & Dunbar, Phila., Pa.  
North Bros. Mfg. Co., Phila., Pa.  
Packer, C. W., Philadelphia, Pa.  
White Mountain Freezer Co., Nashua, N. H.

**Injectors.**  
Eynon-Evans Mfg. Co., Philadelphia, Pa.  
Jenkins Bros., New York

**Insurance, Boiler.**  
Hartford Steam Boiler Inspection & Insurance Co., Hartford, Conn.

**Iron and Steel, Swedish.**  
Lundberg, Gustaf, Boston, Mass.  
Milne, A. & Co., 1 Broadway, N. Y.

**Iron Commission Brokers.**  
Corning, Edw. & Co., 29 B'way, N. Y.  
Cotton, Barclay W. & Co., Phila.  
Etting, Edw. J., Philadelphia.  
Hogan, John L. & Co., Philadelphia, Pa.  
Hoffman, J. W. & Co., Philadelphia.  
Lewis, Henry & Co., Philadelphia.  
Keeley, Jerome & Co., Philadelphia.  
Lea, J. Tatnall & Co., Philadelphia.  
Mohr, J. J., 430 Walnut, Philadelphia.  
Pilling & Orane, Philadelphia, Pa.  
Wister, L. & R. & Co., Phila., Pa.

**Iron Ore.**  
Naylor & Co., 45 Wall, N. Y.  
Samuel, Frank, Philadelphia, Pa.

**Iron, Merchants.**  
Barnes, C. K. & Co., Philadelphia, Pa.  
Borden & Lovell, 70 West, N. Y.  
Bussell & Cunliffe, Philadelphia.  
Corning Edw. & Co., 29 B'way, N. Y.  
Cox, Justice, Jr., Philadelphia.  
Cotton, Barclay W. & Co., Phila.  
Hoffman, J. W. & Co., Philadelphia.  
Leonard, J., 446 West St., N. Y.  
Naylor & Co., 45 Wall St., N. Y.  
Nicolls, Wheeler & Co., Philadelphia.  
Ogden & Wallace, 85 Elm St., N. Y.  
Pierson & Co., 29 Broadway, N. Y.  
Thomson, W. H. & Co., Phila., Pa.  
Wallace, Wm. H. & Co., Albany & Washington streets, N. Y.  
Whitney, A. R. & Co., 17 B'way, N. Y.  
Wilson, E. H. & Co., Philadelphia.

**Iron, Importers.**  
Abbott Wheelock & Co., N. Y. and Boston  
Lundberg, Gustaf, Boston, Mass.

**Iron, Sheet, Manufacturers of.**  
Cambridge Iron & Steel Co., Cambridge  
W. Dewees Wood Co., Lim., McKeesport, Pa.

**Ironwork, Ornamental.**  
Barum, E. T., Detroit, Mich.  
Champion Iron Co., Kenton, O.  
Ludlow-Saylor Wire Co., St. Louis, Mo.  
Mast, Foss & Co., Springfield, O.  
The Van Dorn Iron Works Co., Cleveland, O.

**Keys.**  
Wollensak, J. F., Chicago, Ill.

**Ladders, Rolling.**  
Coburn Trolley Track Mfg. Co., Holyoke, Mass.

**Ladies.**  
Detroit Fay, Equipment Co., Detroit, Mich.

**Lamps.**  
Plume & Atwood Mfg. Co., New York.

**Lamp Stoves.**  
Glasier Stove Co., Chelsea, Mich.  
Plume & Atwood Mfg. Co., 18 Murray Street, New York.

**Lanterns.**  
Buhl Stamping Co., Detroit, Mich.  
Steam Gauge & Lantern Co., Syracuse, N. Y.

**Lathes.**  
Draper Machine Tool Co., Worcester, Mass.  
Johnson, Israel H., Jr., & Co., Philadelphia, Pa.  
Seneca Falls Mfg. Co., Seneca Falls, N. Y.

**Lathing, Wire.**  
Clinton Wire Cloth Co., Clinton, Mass.  
N. J. Wire Cloth Co., Trenton, N. J.  
Wright & Colton Wire Cloth Co., Worcester, Mass.

**Laundry Machines.**  
Johnson, S. C., Racine, Wis.

**Lawn Mowers.**  
Blair Mfg. Co., Springfield, Mass.  
Chadborn & Coldwell Mfg. Co., Newburg, N. Y.  
Coldwell Lawn Mower Co., Newburg, N. Y.  
Dille & McGuire Mfg. Co., Richmond, Ind.

**Lawn Mowers.**  
Enterprise Mfg. Co., Philadelphia, Pa.  
F. & N. Mfg. Co., Richmond, Ind.  
Hest, M. C., Richmond, Ind.  
Mast, Foss & Co., Springfield, O.  
Philadelphia Lawn Mower Co., Philadelphia, Pa.  
Stearns, E. C. & Co., Syracuse, N. Y.  
Supplee Edw. Co., Phila., Pa.

**Lawn Rakes.**  
Gibbs Mfg. Co., Canton, Ohio.  
Kohler, F. E. & Co., Canton, O.  
Schaeffer & Co., Dayton, Ohio.

**Lawn Sprinklers.**  
Ette & Henger Mfg. Co., St. Louis.  
Gibbs Mfg. Co., Canton, Ohio.  
McGowan, John H. Co., Cincinnati O.  
Portland Lawn Sprinkler Co., Portland, Me.

**Lemon Squeezers.**  
Ripley Mfg. Co., Unionville, Conn.

**Letters and Figures, Metallic.**  
White, A. A. & Co., Providence, R. I.

**Letters, Paper.**  
Tablet & Ticket Co., Chicago, Ill.

**Levels.**  
Davis & Cook, Watertown, N. Y.  
Richardson, C. F. & Son Athol, Mass.

**Locks & Knobs, Manufacturers of.**  
Deitz, A. E., 97 Chambers, N. Y.  
Reading Hdw. Co., Reading, Pa.  
Smith & Egge Mfg. Co., Bridgeport, Conn.  
Yale & Towne Mfg. Co., Stamford, Conn.

**Machinery.**

**Am. Tool Works, Cleveland, Ohio.**  
 Barnes, W. F. & John, Rockford, Ill.  
 Bennett, Miles & Co., Philadelphia, Pa.  
 Bigelow, C. E., 46 Dey, N. Y.  
 Bignall & Keeler Mfg. Co., St. Louis.  
 Birmingham Iron Foundry, Birmingham, Conn.  
 Bliss, E. W. Co., Brooklyn, N. Y.  
 Bockert, Jno. L., Flushing, N. Y.  
 Bridgeport Mch. Tool Works, Bridgeport, Conn.  
 Briggs, Marvin, 12 Broadway, N. Y.  
 Carlin's Sons, Thos., Allegheny, Pa.  
 Olm., Milling Mch. Co., Cincinnati, Ohio.  
 Clapp, Geo. M., agt., 74 Cortlandt, N. Y.  
 Detrick & Harvey Mch. Co., Baltimore, Md.  
 Fitchburg Mch. Works, Fitchburg, Mass.  
 Garvin Mch. Co., Laight & Canal Sts. Gould & Eberhardt, Newark, N. J.  
 Hamilton Mch. Tool Co., Hamilton, O.  
 Harrington, E. Son & Co., Phila., Pa.  
 Henderer, A. J., Wilmington, Del.  
 Hender Machine Co., Torrington, Ct.  
 Hill, Clarke & Co., Boston, Mass.  
 Howard & Morse, 45 Fulton St., N. Y.  
 Hulbut-Rogers Mch. Co., Southbury, Mass.  
 Johnson, Israel H., Jr., & Co., Springfield, Vt.  
 Jones & Lamson Mch. Co., Philadelphia, Pa.  
 Lovegrove & Co., Philadelphia, Pa.  
 McCabe, J. J., 68 Cortlandt, N. Y.  
 Machinists Supply Co., Rochester, N. Y.  
 Manville, E. J. Mch. Co., Waterbury, Conn.  
 Newark Mch. Tool Works, Newark, N. J.  
 New Haven Mfg. Co., New Haven, Conn.  
 Niles Tool Wks., 138 Liberty St., N. Y.  
 Pittsburgh Mfg. Co., Pittsburgh, Pa.  
 Place, Geo., 120 Broadway, N. Y.  
 Poole, Robt. & Son Co., Baltimore, Md.  
 Power Planer Co., Worcester, Mass.  
 Pratt & Whitney Co., Hartford, Conn.  
 Prentiss Tool & Supply Co., N. Y.  
 Scranton Supply & Mch. Co., Scranton, Pa.  
 Sellers, Wm. & Co., Phila.  
 Seyfert's Sons L. F., Philadelphia, Pa.  
 Steptoe, J. & Co., Cincinnati, O.  
 Stow Flexible Shaft Co., Ltd., Phila.  
 Toomey, Frank, Philadelphia, Pa.  
 Wetherill, Robert & Co., Chester, Pa.  
 Wicks Bros., Saginaw, Mich.  
 Wilson, W. A., Rochester, N. Y.

**Machinery for Hardware Manufacture.**

Adt, Jno. & Son, New Haven, Conn.

**Machine Knives.**

Loring Coes & Co., Worcester, Mass.

**Machine Screws.**

New Britain Hdw. Mfg. Co., New Britain, Conn.

**Machine Tools.—See Machinery****Machine Work.**

Papping, J., 58th St., & 11th Ave., N. Y. City.

**Machinists' Scales.**

Coffin & Leighton, Syracuse, N. Y.  
 Starrett, L. S., Athol, Mass.  
 Valentine Tool Co., Hartford, Conn.

**Machinists' Tools and Supplies.**

King, J. M. & Co., Waterford, N. Y.  
 Sellers, Wm. & Co., Inc., Phila.

**Mallets.**

N. Y. Mallet & Handle Works, N. Y.

**Mangles.**

Johnson, S. O., Racine, Wis.

**Measuring Tapes.**

Keuffel & Esser Co., 127 Fulton St., N. Y.  
 Lufkin Rule Co., Saginaw, Mich.

**Mechanical Instruction.**

Correspondence School of Mechanics, Scranton, Pa.

**Metals.**

Fearing, Wm. S., 100 Chambers, N. Y.  
 Hendricks Bros., 49 Cliff, N. Y.  
 Naylor & Co., 45 Wall, N. Y.

**Metal Brokers.**

American Metal Co., N. Y.

**Metalurgists.**

Britton J. Blodgett, Phil.

**Milk Can Trimmings.**

Shepard, Sidney & Co., Buffalo, N. Y.

**Milling Machines.**

Cin. Milling Mch. Co., Cincinnati, Ohio.

**Mining Knives.**

Palmer Hdw. Mfg. Co., Troy, N. Y.

**Mine Lamps.**

Darby, Edw. & Sons, Phila., Pa.  
 Leonard, B. E., Scranton, Pa.

**Mining Screens.**

Harrington & King Perforating Co., Chicago, Ill.

Howard & Morse, 45 Fulton, N. Y.

**Models, Makers of.**

Franklin, H. H. Mfg. Co., Syracuse, N. Y.

Ideal Machine Works, Hartford, Conn.

Rhodes, L. E. Co., Hartford, Conn.

**Molding Sand.**

Obermayer, S. Co., Cincinnati, O.

**Motors, Water and Electric.**

O. & C. Electric Co., 402 and 404 Greenwich St., N. Y.

Dallett, Thos. H. & Co., Phila., Pa.

**Nail Machinery.**

Pittsburgh Mfg. Co., Pittsburgh, Pa.

**Nails (Out) and Spikes.**

Borden & Lovell, 70 West, N. Y.

Cumberland Nail & Iron Co., Phila.

Oxford Iron Co., 81 Washington, Pottstown, Pa.

Riverside Iron Wks., Wheeling, W. Va.

**Norway Shapes, Rollers of.**

Rowland, William & Harvey, Framford, Philadelphia

**Novelty Manufacturers.**

Franklin, H. H. Mfg., Syracuse, N. Y.

Ideal Machine Works, Hartford, Conn.

**Nut Machines.**

Onham Nut Mch. Co., Unionville, Ct.

**Nuts, Bolts, &c., Makers of.**

American Bolt Co., Lowell, Mass.

American Screw Co., Providence, R. I.

Blake & Johnson, Waterbury, Conn.

Eastern Forge Co., Boston, Mass.

Taskell, Wm. H. Co., Pawtucket, R. I.

Mt. Carmel Bolt Co., Mt. Carmel, Conn.

Pennsylvania Bolt & Nut Co., Lebanon, Pa.

Port Chester Bolt and Nut Co., Port Chester, N. Y.

Russell, Burdall & Ward, Port Chester, N. Y.

Sternbergh, J. B. & Son, Reading, Pa.

Wilson, J. Fred., Worcester, Mass.

Wm. H. Haskell Co., Pawtucket, R. I.

**Oilers.**

Willmot & Hobbs Mfg. Co., Bridgeport, Conn.

**Oil Stones.**

Pike Mfg. Co., Pike Station, N. H.

**Oil Stoves.**

Glazier Stove Co., Chelsea, Mich.

**Ores.**

Wister, Francis, Philadelphia, Pa.

**Shoes.**

Scranton Forging Co., Scranton, Pa.

**Packing.**

Morrison, Robt., St. Louis, Mo.

N. Y. Belting & Packing Co. Ltd., N. Y.

**Paddocks.**

Ames Sword Co., Chicopee, Mass.

Fraim, E. T., Lancaster, Pa.

Hillebrand & Wolf, Phila., Pa.

**Pails.**

Richmond Cedar Wks., Richmond, Va.

**Paint.**

Dixon, Jos. Crucible Co., Jersey City, N. J.

**Paint Burners.**

Dangler Stove & Mfg. Co., Cleveland, O.

**Paint Cans.**

Willmot & Hobbs Mfg. Co., Bridgeport, Conn.

**Pants Stretcher.**

Covert Mfg. Co., West Troy, N. Y.

**Patent Solicitors.**

Howson & Howson, Phila. & Wash'ton.

Jenner, H. W. T., Washington, D. C.

Stocking, E. B., Washington, D. C.

**Perforated Metal.**

Clinton Wire Cloth Co., Clinton, Mass.

Harrington & King Perforating Co., Chicago, Ill.

Hendrick Mfg. Co., Ltd., Carbondale, Pa.

**Phosphor Bronze.**

Phosphor Bronze Smelting Co., Limited, 512 Arch, Philadelphia.

**Phosphor Tin.**

Crescent Phosphorized Metal Co., Philadelphia, Pa.

Halk & Naumann, 516 Pearl, N. Y.

**Picks and Mattocks.**

Stumo, Fayette R., Philadelphia, Pa.

**Pig Forceps.**

Reimers, J. N., Davenport, Ia.

**Pig Iron.**

Houston, C. B. & Co., Philadelphia, Pa.

Montour Iron & Steel Co., Danville, Pa.

Saylor & Co., 45 Wall, N. Y.

Piling & Crane, Philadelphia, Pa.

Samuel, Frank, Philadelphia, Pa.

**Pig Iron Storage.**

Am. Pig Iron Storage Warrant Co., 44 Wall, N. Y.

**Pile Drivers.**

Vulcan Iron Wks., Chicago, Ill.

**Pipe, Bent.**

National Pipe Bending Co., New Haven

**Pipe Cutting and Threading Machines.**

Signal & Keeler Mfg. Co., St. Louis, Mo.

Merrill Mfg. Co., Toledo, O.

Pancoast Henry B. & Co., Philadelphia, Pa.

Saunders's Sons, D., Yonkers, N. Y.

**Pipe Grips.**

Prentiss Vise Co., 44 Barclay, N. Y.

**Pipes, Fittings, &c., Makers of.**

McNab & Harlin Mfg. Co., N. Y.

**Pipe, Water and Gas, Makers of.**

Cumberland Nail & Iron Co., Phila., Pa.

Donaldson Iron Co., Emaus, Pa.

Riverside Iron Works, Wheeling, W. Va.

Wood, R. D. & Co., Philadelphia, Pa.

**Plane Irons, Manufacturers of.**

Suck Bros., Millbury, Mass.

**Planes, Manufacturers of.**

Stanley Rule & Level Co., N. Y.

**Plated Ware.**

Boardman, L. & Son, New Bedford, Ct.

Holmes & Edwards Silver Co., Bridgeport, Conn.

Rogers, Wm. Mfg. Co., Hartford, Ct.

**Plate, Iron and Steel, Mfrs of.**

Etna-Standard Iron & Steel Co., Bridgeport, O.

Likens Iron & Steel Co., Coatesville, Pa.

**Mahoning Valley Iron Co., Youngstown, Ohio.**

McKeehead-McLean Co., Pittsburgh, Pa.

Mellvain & Sons, Reading, Pa.

Pottstown Iron Co., Pottstown, Pa.

Pottsville Iron & Steel Co., Pottsville, Pa.

Singer, Nimick & Co., Pittsburgh, Pa.

The Mahoning Valley Iron Co., Youngstown, O.

Wellman Iron & Steel Co., Thurlow, Pa.

Wood Alan Co., Philadelphia.

**Clating, Nickel, Brass and Silver.**

Willmot & Hobbs Mfg. Co., Bridgeport, Conn.

**Plow Shares.**

Star Mfg. Co., Carpentersville, Ill.

**Pokers and Lifters.**

Troy Nickel Works, Troy, N. Y.

**Polishing Machines.**

Watson & Stillman, 204 E. 43d, N. Y.

**Post Hole Diggers.**

Buckeye Mfg. Co., Union City, Ind.

Gibbs Mfg. Co., Canton, Ohio.

Graham, Jno. H. & Co., 113 Chambers St., N. Y.

Winter, L. & R. Co., Philadelphia, Pa.

**Poultry Nettings.**

Barnum, E. T., Detroit, Mich.

Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.

N. J. Wire Cloth Co., Trenton, N. J.

"Silver Finish."

Tyler Wire Wks. Co., W. S., Cleveland, O.

Wright & Colton Wire Cloth Co., Worcester, Mass.

**Powder.**

Lafin & Rand Powder Co., 29 Murray

New York Powder Co., 62 Liberty St., N. Y.

**Power Hack Saws.**

Millers Falls Co., 93-Read St., N. Y.

**Power Hammers.**

Selden Mch. Co., New Haven, Conn.

Diemel & Eisenhardt, Philadelphia.

Dupont Mfg. Co., St. Johnsbury, Vt.

Jenkins & Lingle, Bellefonte, Pa.

Long & Allstatter Co., Hamilton, Ohio

**Presses, Dies, &c.**

E. W. Bliss Co., Brooklyn, N. Y.

Crosby, G. A. & Co., Chicago, Ill.

Stark Mch. & Tool Co., Buffalo, N. Y.

Stiles & Parker Press Co., Brooklyn, N. Y.

Waterbury Mch. Co., Waterbury, Conn.

**Presses, Power, Makers of.**

Bliss, E. W. Co., Brooklyn, N. Y.

Canville, E. J. Mch. Co., Waterbury, Ct.

Merriman, A. H., Meriden.

Stark Mch. & Tool Co., Buffalo, N. Y.

Waterbury Farrel Foundry and Machine Co., Waterbury, Conn.

**Pulleys.**

Keystone Clutch Mch. Wks., Phila., Pa.

Lake, J. H. & D. Co., Massillon, Ohio.

**Pumping Machinery.**

Dean Bros. Steam Pump Works, Indianapolis, Ind.

McGowan, J. H. & Co., Cincinnati, O.

Maxlin, J. & Son, Jersey City, N. J.

Norwalk Iron Wks. Co., So. Norwalk, Conn.

Southwark Fdy. & Mch. Co., Phila., Pa.

Valley Pump Wks., Easthampton, Mass.

Worthington, Henry R., 86 & 88 Liberty St., N. Y.

**Pumps, Makers of.**

Bellevue Pump Co., Bellevue, Iowa.

Deming Co., Salem, U.

Douglas, W. B., Middletown, Conn.

Mast, Poes & Co., Springfield, O.

Myers, F. E. & Bro., Ashland, O.

**Punches and Shears, Hand and Power.**

E. W. Bliss Co., Brooklyn, N. Y.

Cockburn Barrow & Mch. Co., Jersey City, N. J.

Crosby, G. A. & Co., Chicago, Ill.

Henderer, A. L., Wilmington, Del.

Long & Allstatter Co., Hamilton, Ohio.

Stark Mch. & Tool Co., Buffalo, N. Y.

Stiles & Parker Press Co., Brooklyn, N. Y.

Waterbury Farrel Foundry and Mch. Co., Waterbury, Conn.

Watson & Stillman, 204 E. 43d, N. Y.

**Rails, Old and New.**

Perry, W. H. & Co., Providence, R. I.

**Rat and Mouse Traps.**

Eatey, W. S., 65 Fulton, N. Y.

Ripley Mfg. Co., Unionville, Conn.

**Razors.**

Electric Cutlery Co., 113 Chambers, N. Y.

J. B. Torrey Razor Co., Worcester, Mass.

- Allentown Rolling Mill, Allentown, Pa.**  
Lockhart Iron & Steel Co., Pittsburg, Pa.
- Passaic Rolling Mill Co., Paterson, N.J.**  
Pottsville Iron & Steel Co., Pottsville, Pa.
- Roberts, A. & P. & Co., Phila., Pa.**  
The Phoenix Iron Co., Phila., Pa.  
Tudor Iron Works, St. Louis, Mo.
- Shears and Bolsters.**  
Asme Shear Co., Bridgeport, Conn.  
Reinischs, R. Sons Co., Newark, N. J.
- Sheet Iron and Steel, Manufacturers of.**  
Etna-Standard Iron and Steel Co., Bridgeport, O.  
Cambridge Iron & Steel Co., Cambridge, Ohio.  
Chess Bros., Pittsburgh, Pa.  
Mahoning Valley Iron Co., Livingston, Ohio.  
Moorehead-McCleane Co., Pittsburgh, Pa.  
Pierston & Co., 29 Broadway, N. Y.  
Singer, Nimick & Co., Ltd., Pittsburgh, Pa.  
The Mahoning Valley Iron Co., Youngstown, O.  
Alan Wood Co., Philadelphia.  
W. Dewees Wood Co., McKeesport, Pa.
- Sheet Metal Work.**  
Clark & Cowles, Plainville, Conn.
- Sheet Zinc.**  
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Shelf Brackets.**  
Koch, A. B. & Co., Peoria, Ill.
- Slabs.**  
Douglas, W. & B., Middletown, Conn.
- Skates, Ice.**  
Dane, Stoddard & Kendall, Boston, Mass.  
Lovell, Jno. P. Arms Co., Boston, Mass.  
Winslow, Saml., Skate Mfg. Co., Worcester, Mass.
- Skates, Roller.**  
Henley, M. O., Richmond, Ind.  
Winslow, Saml., Skate Mfg. Co., Worcester, Mass.
- Smelting Works.**  
Reeves, Paul S., 760 S. Broad, Phila.
- Soldering Coppers.**  
Clendenin Bros., Baltimore, Md.  
Covert Mfg. Co., West Troy, N. Y.
- Speaking Tubes.**  
Ostrander, W. R. & Co., 204 Fulton St., N. Y.  
Wollensak, J. F., Chicago, Ill.
- Specialties, Pat. Articles.**  
Konigslow, O., Cleveland, O.  
Rhodes, L. E. Co., Hartford, Conn.
- Spelter.**  
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Spoons and Forks.**  
Boardman, L. & Son, New Haddam, Conn.  
Holmes & Edwards Silver Co., Bridgeport, Conn.  
Rogers, The Wm. Mfg. Co., Hartford, Conn.
- Sporting Goods.**  
Hartley & Graham, 313-315 B'way, N.Y.
- Springs.**  
Dunbar Bros., Bristol, Conn.  
Miller & Van Winkle, Brooklyn, N. Y.  
Morgan Spring Co., Worcester, Mass.  
Roland, Wm. & Harvey, Phila., Pa.  
Sabin Machine Co., Montpelier, Vt.  
Tuck Mfg. Co., Brockton, Mass.  
Washburn & Moen Mfg. Co., Worcester, Mass.  
Wold, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.
- Spring Hinges.**  
Fullman Sash Balance Co., Rochester, N. Y.  
Stover Mfg. Co., Freeport, Ill.  
Van Wagoner & Williams Co., 14 Warren St., N. Y.
- Stamped Ware.**  
Am. Stamping Co., 104 & 106 John St., New York.
- Stamping Works.**  
Cleveland Stamping & Tool Co., Cleveland, O.
- Staples.**  
Cobb & Drew, Plymouth, Mass.  
Titcheener E. H. & Co., Binghamton, N.Y.
- Steam Engines.**  
Ashcroft Mfg. Co., 111 Liberty St., N.Y.  
Bristol Co., Waterbury, Conn.
- Steam Hammers, &c., Makers of.**  
Deniet & Eisenhardt, Philadelphia.  
Dudgeon, Richard, 24 Columbia Street, N. Y.  
Tretlowey Mfg. Co., Pittsburgh, Pa.
- Steam Heating.**  
Webster Warren & Co., Camden, N.J.
- Steam Separators.**  
Gouvert Mfg. Co., 32 Cortland St., N. Y.  
Harrison Safety Boiler Works, Phila. Pa.
- Steel, Cold Rolled Strip.**  
Superior Steel Co., Pittsburgh, Pa.  
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Figures and Alphabets.**  
Hoefig, C. W., 52 Fulton St., N. Y.  
Horsrad, W., 61 Fulton St., N. Y.  
Wolff, O. H., 177 William St., N. Y.
- Steel Importers.**  
Abbott, Wheelock & Co., N. Y. and Boston.  
Hobson, Francis, Seaman & Co., 97 John St., N. Y.  
Jessop, Wm. & Sons, Sheffield, England, or 91 John St., N. Y.  
Kline, A. & Co., 1 Broadway, N. Y.  
Newton & Shipman, 88 John, N. Y.  
Wetherell Bros., 93 Liberty St., N. Y.  
Whitney, A. R. & Co., B'way, N. Y.  
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Steel (Mushet's Special).**  
Jones, B. M. & Co., Boston.
- Steel Manufacturers.**  
Etna-Standard Iron & Steel Co., Bridgeport, O.  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Carbide, Herman & Co., 103 Duane St., New York, N. Y.  
Chester Steel Castings Co., Phila., Pa.  
Chrome Steel Works, Brooklyn, N. Y.  
Crescent Steel Co., Pittsburgh, Pa.  
Elken & Co., Hagen, Germany.  
Frankford Steel Co., Philadelphia.  
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.  
Hobson, Francis, Seaman & Co., 97 John St., N. Y.  
Jessop, Wm. & Sons, Sheffield, England, or 91 John St., N. Y.  
Kaiser, E. & Co., Sheffield, Eng.  
La Belle Steel Co., Pittsburgh, Pa.  
Lukens Iron & Steel Co., Coatesville, Pa.  
Moorehead-McCleane Co., Pittsburgh, Pa.  
Moss, F. W., 88 John St., N. Y.  
Naylor & Co., 45 Wall, N. Y.  
Pottsville Iron and Steel Co., Pottsville, Pa.  
Rowland, Wm. & Harvey, Frankford, Pa.  
Singer, Nimick & Co., Pittsburgh.  
Stanley Works, New Britain, Conn.  
Steel & Iron Improvement Co., Pittsfield, Pa.  
Superior Steel Co., Pittsburgh, Pa.  
Wordlaw, S. & C., Sheffield, Eng.  
Wetherell Bros., 93 Liberty, N. Y.  
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel, Manufacturers' Agents.**  
Barnes, C. K. & Co., Philadelphia, Pa.  
Corning, Edw. & Co., 29 B'way, N. Y.  
Frasse Co., 19 Warren St., New York.  
Lindsay, Jas. G. & Co., Phila., Pa.  
Pierston & Co., 29 Broadway, N. Y.
- Steel Rails, Manufacturers of.**  
Bethlehem Iron Co., S. Bethlehem, Pa.  
Cambria Iron Co., Johnstown, Pa.  
Centaur Iron & Steel Co., Danville, Pa.  
Riverside Iron Wks., Wheeling, W. Va.
- Steel, Tool.**  
Frankford Steel Co., Philadelphia, Pa.  
Jessop, Wm. & Sons, Sheffield, England, 91 John, N. Y.  
Jones, B. M. & Co., Boston, Mass.  
La Belle Steel Co., Pittsburgh, Pa.
- Step Ladders.**  
Bicycle Step Ladder Co., Chicago, Ill.  
Croissant, M., Albany, N. Y.
- Stocks and Dies.**  
Armstrong Mfg. Co., Bridgeport, Conn.  
Billings & Spencer Co., Hartford, Conn.  
Butterfield & Co., Derby Line, Vt.  
Hart Mfg. Co., Cleveland, O.  
Saunders' Sons, D., Yonkers, N. Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stove Linings.**  
Ostrander Fire Brick Co., Troy, N. Y.
- Stove Pipe Thimbles.**  
Cheney, S. & Son, Manlius, N. Y.
- Stove Trimmings.**  
Troy Nickel Works, Troy, N. Y.
- Street Lamps.**  
Steam Gauge & Lantern Co., Syracuse, N. Y.
- Strops.**  
Electric Cutlery Co., 113 Chambers, N.Y.  
J. R. Torrey & Co., Worcester, Mass.
- Structural Iron Work.**  
Boston Bridge Wks., Boston, Mass.  
Lindsay, Jas. G. & Co., Phila., Pa.  
Wrought Iron Bridge Co., Canton, O.
- Sulphuric Acid.**  
Mathlessen & Hegeler Zinc Co., La Salle, Ill.
- Tacks, Brads, Staples, &c.**  
Atlas Tack Corporation, Boston, Mass.  
Clendenin Bros., Baltimore, Md.  
Cobb & Drew, Plymouth, Mass.  
Grand Crossing Tack Co., Grand Crossing, Ill.
- Taps and Dies.**  
Easterfield & Co., Derby Line, Vt.  
Carpenter, J. M., Tap & Die Co., Pawtucket, R. I.  
Manning, Maxwell & Moore, 111 Liberty St., N. Y.  
Wells Bros. & Co., Greenfield, Mass.  
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Testing Laboratories.**  
Riehle Bros. Testing Mch. Co., Philadelphia.
- Testing Machines.**  
Riehle Bros. Testing Mch. Co., Philadelphia.
- Theatrical Hardware.**  
Wollensak, J. F., Chicago, Ill.
- Thill Springs.**  
Frost Thill Spring Co., Boston, Mass.  
Sabin Machine Co., Montpelier, Vt.
- Timber and Mineral Land.**  
Robertson, E. Co., Cincinnati, O.
- Time Record.**  
Scattergood, H. W., Phila., Pa.
- Tinning Process.**  
Sands, Thomas, Nashua, N. H.
- Tin Plate Machinery.**  
Lloyd Booth Co., Youngtown, Ohio.
- Tinware.**  
Am. Stamping Co., 104 & 106 John St., N. Y.
- Tire Upsetters.**  
Butts & Ordway, Boston, Mass.
- Toe Calks, Steel.**  
Burke, P. F., Boston, Mass.
- Tool Blocks.**  
Hulbut-Rogers Mch. Co., South Sudbury, Mass.
- Tool Chests.**  
Am. Tool Co., 200 W. Houston St., N.Y.
- Tools.**  
Brown, R. H. & Co., New Haven, Conn.  
Frasse Co., 19 Warren St., New York.  
Mayhew, H. H. Co., Shelburne Falls, Mass.  
Mills, J. S., 93 Reade, N. Y.  
Richardson, O. F. & Son, Athol, Mass.  
Stanley Rule & Level Co., 29 Chambers, New York, N. Y.  
Wilkinson, A. J. & Co., Boston, Mass.
- Tools, Blacksmith and Wheelwrights.**  
Buffalo Forge Co., Buffalo, N. Y.  
Butts & Ordway, Boston, Mass.  
Champion Blower & Forge Co., Lancaster, Pa.  
Plumb, Fayette R., Philadelphia, Pa.  
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Tools, Steam and Gas Fitters'.**  
Saunders' Sons, D., Yonkers, N. Y.
- Torches, Oil and Gasolene.**  
Danzler Stove & Mfg. Co., Cleveland, O.  
Schneider & Trenkamp Co., Cleveland, Ohio.
- Transom Lifters.**  
Wollensak, J. F., Chicago, Ill.
- Tricycles.**  
Toledo Metal Wheel Co., Toledo, Ohio.
- Trucks, Manufacturers of.**  
Clark, G. P., Windsor Locks, Conn.  
Lansing Wheelbarrow Co., Lansing, Mich.
- Tubes, Seamless Drawn Copper.**  
Ansonia Brass & Copper Co., 19 and 21 Cliff, N. Y.  
Randolph & Clowes, Waterbury, Conn.
- Tubes, Steel.**  
Ellwood Shafting & Tube Co., Ellwood City, Pa.  
Leng's John S. Son & Co., 4 Fletcher St., New York.  
U. S. Projectile Co., Brooklyn, N. Y.
- Tumbling Barrels.**  
Henderson Bros., Waterbury, Conn.
- Turnbuckles.**  
Cleveland City Forge & Iron Co., Cleveland, O.  
Merrill Bros., Brooklyn, E. D.
- Twist Drills, Makers of.**  
Cleveland Twist Drill Co., Cleveland.  
Morse Twist Drill & Machine Co., New Bedford, Mass.  
New Process Twist Drill Co., Taunton, Mass.  
Standard Tool Co., Cleveland.
- Valves, Gas, Water and Steam.**  
Best, Fox & Co., Pittsburgh, Pa.  
Chapman Valve Mfg. Co., Boston.  
Eynon-Evans Mfg. Co., Philadelphia, Pa.  
Jenkins Bros., 71 John, N. Y.  
Lunkenheimer Co., Cincinnati, O.  
McNab & Harlin Mfg. Co., 56 John, N. Y.
- Ventilator Appliances.**  
Howard & Morse, 45 Fulton, N. Y.
- Vise Jaws.**  
Newark Mch. Tool Co., Newark, N. J.
- Vises.**  
Athol Machine Co., Athol, Mass.  
Capital Mch. Tool Co., Auburn, N. Y.  
Hollands Mfg. Co., Erie, Pa.  
Howard Iron Works, Buffalo, N. Y.  
Millers Falls Co., 93 Reade St., N. Y.  
Prentiss Vise Co., 44 Barclay N. Y. Y.  
Van Wagoner & Williams Co., Warren St., N. Y.
- Wagon Jacks.**  
Covert Mfg. Co., West Troy, N. Y.  
Covert's Saddlery Works, Farmer, N. Y.
- Washers.**  
Haskell, Wm. H. Co., Pawtucket, R. I.  
Milton Mfg. Co., Milton, Pa.  
Sternbergh, J. H. & Son, Reading, Pa.
- Washing Machines.**  
Richmond Cedar Works, Richmond, Va.
- Water Meters.**  
Worthington, Henry R., 86 & 88 Liberty St., N. Y.
- Water Wheels.**  
Poole, Robt. & Son Co., Baltimore, Md.
- Wheelbarrows.**  
Amer. Steel Scraper Co., Sidney, Ohio.  
Byran Mfg. Co., Byran, Ohio.  
Cookburn Barrow & Mch. Co., Jersey City, N. J.  
Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.  
Lansing Wheelbarrow Co., Lansing, Mich.  
Sidney Steel Scraper Co., Sidney, O.
- Window Cleaners.**  
Bourke Mfg. Co., Youngstown, O.
- Window Cord, Makers of.**  
Samson Cordage Works, Boston, Mass.
- Wire, Manufacturers of.**  
Gautier Steel Department of Cambria Iron Co., Johnstown, Pa.  
Miller & Van Winkle, Brooklyn, N. Y.  
New Castle Wire Nail Co., New Castle, Pa.  
New Haven Wire Mfg. Co., New Haven, Conn.  
Prentiss, Geo. W. & Co., Holyoke, Mass.  
Salem Wire Nail Co., Salem, Vt.  
Trenton Iron Co., Trenton, N. J.  
Washburn & Moen Mfg. Co., Worcester.  
Wetherell Bros., 93 Liberty St., N. Y.  
Wolff, R. H. & Co., Ltd., 118th St. and Harlem River, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.
- Wire Cloth.**  
Barnum, E. T., Detroit, Mich.  
Clinton Wire Cloth Co., Clinton, Mass.  
Darby, Edward & Sons, Philadelphia.  
Eatey, W. S., 65 Fulton, N. Y.  
Gilbert & Bennett Mfg. Co., 42 Cliff, N. Y.  
Howard & Morse, 45 Fulton, N. Y.  
N. J. Wire Cloth Co., Trenton, N. J.  
Scheeler & Sons, Buffalo, N. Y.  
Wickwire Bros., Cortland, N. Y.  
Wright & Colton Wire Cloth Co., Worcester, Mass.  
W. S. Tyler Wire Works Co., Cleveland.
- Wire Cutters.**  
King, J. M. & Co., Watertown, N. Y.
- Wire Dies.**  
McFarland, Wm., Trenton, N. J.  
Newton & Shipman, 88 John, N. Y.
- Wire Fences.—See Fencing, Iron and Wire.**
- Wire Goods, Manufacturers of.**  
Darby, Edward & Sons, Phila.  
Gilbert & Bennett Mfg. Co., 42 Cliff St., N. Y.  
Ludlow-Saylor Wire Co., St. Louis.  
Ossawan Mills Co., Norwalk, Conn.  
Scheeler & Sons, Buffalo, N. Y.  
Wickwire Bros., Cortland, N. Y.  
Williamson, C. T. Wire Novelty Co., Newark, N. J.
- Wire Machinery.**  
Am. Tool Wks., Cleveland, O.  
Manville, E. J. Mch. Co., Waterbury, Conn.  
Morgan Construction Co., Worcester, Mass.  
Waterbury Mch. Co., Waterbury, Conn.
- Wire Straightening and Outlines.**  
Machinery.  
Adt, John & Son, New Haven, Conn.
- Wire Nails.**  
Bond Nail Co., Raynham, Mass.  
Indiana Wire Fence Co., Crawfordville, Ind.  
Kilmer Mfg. Co., Newburg, N. Y.  
New Castle Wire Nail Co., New Castle, Pa.  
Phillips, Townsend & Co., Phila., Pa.  
Salem Wire Nail Co., Salem, O.  
Taunton Wire Nail Co., Taunton, Mass.  
Whitney, A. R. & Co., New York City.
- Wire Rods, Steel.**  
New Castle Wire Nail Co., New Castle, Pa.  
Washburn & Moen Mfg. Co., Worcester, Mass.  
Whitney, A. R. & Co., 17 B'way, N. Y.  
Wolff, R. H. & Co., Ltd., 118th Street and Harlem River, N. Y.
- Wire Rope, Iron and Steel Makers.**  
Broderick & Bascom Rope Co., St. Louis, Mo.  
California Wire Works, San Francisco.  
Hazard Mfg. Co., Wilkesbarre, Pa.  
A. Leichen & Sons Rope Co., St. Louis.  
Trenton Iron Co., Trenton, N. J.  
Washburn & Moen Mfg. Co., Worcester, Mass.  
Williamsport Wire Rope Co., Williamsport, Pa.
- Wood-Working Machinery.**  
Fay, J. A. & Egan Co., Cincinnati, O.  
Seneca Falls Mfg. Co., Seneca Falls, N. Y.  
Wilkinson, A. J. & Co., Boston, Mass.
- Wrenches, Manufacturers of.**  
Bemis & Call Hardware & Tool Co., Springfield, Mass.  
Billings, Spencer & Co., Hartford, Conn.  
Coes Wrench Co., Worcester, Mass.  
Trumont Mfg. Co., Roxbury, Mass.  
Williams, J. H., Brooklyn, N. Y.
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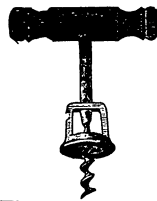
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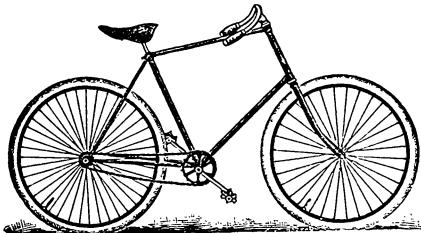
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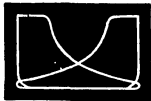
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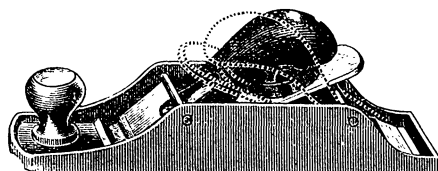
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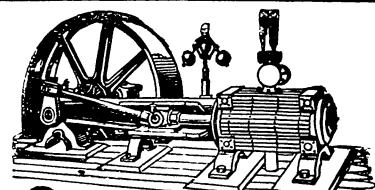
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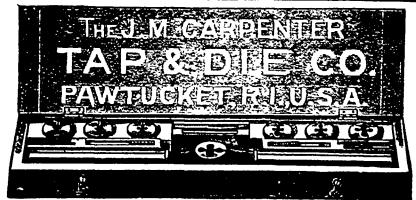
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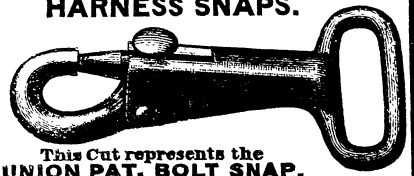
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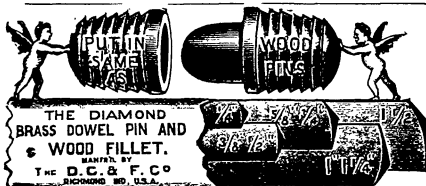
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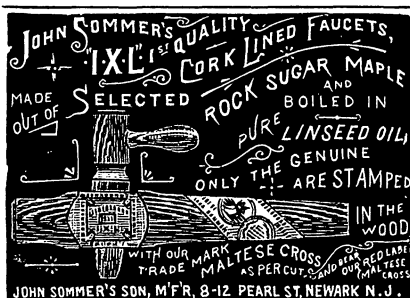
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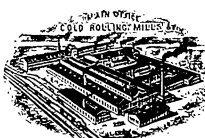
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present the rear portion of the breech to the action of the cutting tools, which are situated above this table.

The work table is provided on its rear face with a rack, G, Figs. 1 and 2, with which engages a pinion mounted upon a transverse shaft, H, which may be turned to vertically adjust the table, either by hand or power, by revolving the gear wheel mounted on the outer end of the shaft and meshing with a pinion on the shaft carrying the hand

through the shaft K to the table adjusting mechanism are mounted loose belt wheels, from which extend belts, one straight and the other crossed, to the pulleys shown in the center of the upper part of the plan, Fig. 3, so that the pulleys are driven in opposite directions. These pulleys are provided with clutch faces to engage with the clutch L. In the annular groove in the clutch are the forked ends of a standard, secured to a guide rod, M, the forward

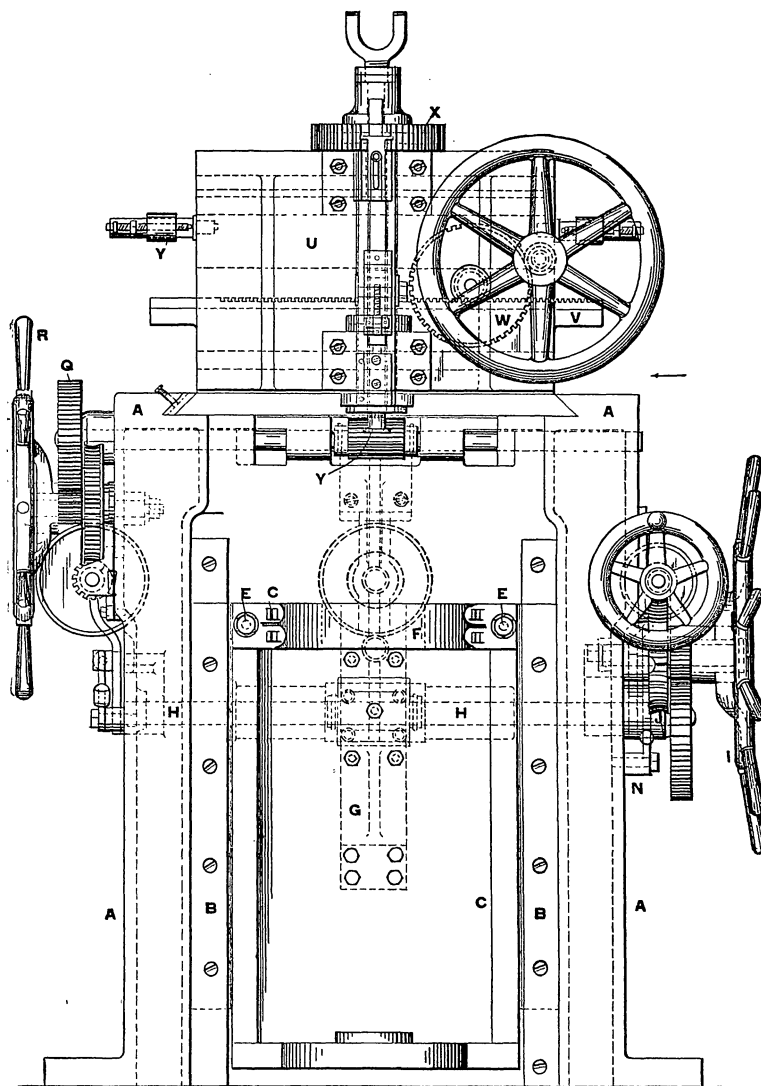


Fig. 1.—Front Elevation.

## UNIVERSAL METAL WORKING MACHINE.

ployed for any other work of similar character. At the front of the frame are vertical slide ways, B, in which is guided a vertically adjustable table, C, on which the piece to be worked is placed; this table in this instance being designed more particularly to hold a gun breech. The main body of the table is open and provided at its upper portion with a semicircular supporting piece, D, Fig. 3, to which is secured by bolts, E, a semicircular holding clamp, F, the two portions being adapted to surround the body of the breech immediately below the shoulder, so as to

wheel I. Instead of this arrangement it has been found preferable to employ power for effecting this adjustment, especially when the work is being drilled and it is necessary to gradually raise the table. The adjustment by power is obtained by the worm wheel J, with which engages a worm mounted upon the shaft K, Fig. 2, which is coupled by a universal joint to a shaft which may be driven in either direction. The device can be operated by hand when the worm is raised to disengage it from the worm wheel. On the shaft through which motion is transmitted

end of which is connected to one arm of a bell crank lever, N, fulcrumed to the frame of the machine, the opposite arm of the lever being provided with a handle and a locking bolt, which may engage with any one of three locking notches in a rack secured to the frame work and by means of which the clutch may be made locked in engagement with either of the clutching faces, or be locked midway between the two pulleys, as desired.

The upper frame of the machine is provided with dovetailed guide ways, in which is adapted to travel a frame

provided on its under surface with a rack, O, with which engages a pinion, P, held upon a shaft on the opposite end of which is a gear wheel, Q, with which engages a pinion, mounted upon a shaft, which also carries a hand wheel, R, by which the necessary movement may be imparted to the pinion P to move the frame longitudinally on the machine, as shown at the right in Figs. 1 and 3.

The worm and worm wheel shown permit of adjustment by hand or power, the former being possible when the worm is raised to disengage it from its wheel. The clutch S, Fig. 4, mounted between the two pulleys, permits of driving in either direction.

The front face of the frame is provided with dovetailed guides for the reception of a transversely adjustable tool carriage, U, and on this frame is secured a rack, V, the teeth of which mesh with the teeth of a pinion mounted upon one end of a stub shaft secured in the carriage, and upon the opposite end of this shaft is a gear wheel, W, with which engages a pinion mounted upon a shaft or stud, which also carries a hand wheel, by turning which the pinion is caused to traverse the rack V, and so move the tool carrying frame U transversely across the machine.

The main tool mandrel is held in suitable bearings in the carriage and is provided at its upper end with a gear wheel, X, with which engages a pinion mounted upon one end of a stub shaft, the upper end of which is connected by a universal joint to a driven shaft, so that the necessary rotative movement may be imparted to the shaft without regard to the position to which the tool mandrel may be adjusted. Any form of tool may be secured in this mandrel, either a milling, shaping or other cutting tool or a drill or reamer, and the machine may be advantageously employed for cutting or milling in regular forms, as it is only necessary to employ a former of the proper shape, and after starting the tool to continuously adjust the frame and the tool carriage to keep the tool well up to the former.

In the tool mandrel Y, Figs 1 and 2, may be secured a tool of any desired character and which, owing to its more rapid rotation, may be employed to do the smaller work in a much quicker manner than if the other tool mandrel be used. This tool mandrel may also be used to hold a slotting tool to which a vertical reciprocating motion is given by hand. In some classes of work it is desirable that the tool mandrel be held in one position while the work is being performed, and therefore provision is made for the locking of the frame and carriage, U, the frame being held by one or more set screws extending through the frame of the machine and engaging with the slide, while the carriage is held in position by means of set nuts extending through collars, Z, adjustably secured to studs on the slide by set screws, so that by moving the collars to the extreme end of the studs the carriage U may be used a considerable distance without coming into contact with the screws.

In the courts of Dauphin County, Pa., there was recently handed down a decision by Judge Simonton which is of considerable interest to natural gas companies. It was filed in the case of the Philadelphia Company, who supply natural gas to the city of Pittsburgh. The opinion shows that the

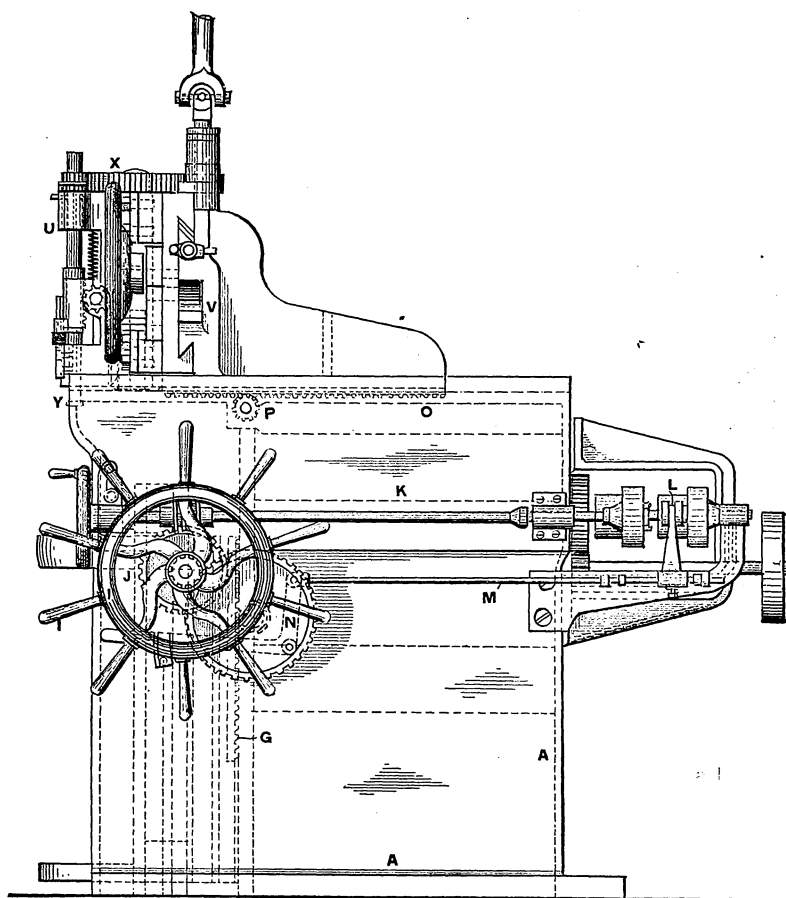


Fig. 2.—Side Elevation, Looking in Direction of Arrow in Fig. 1.

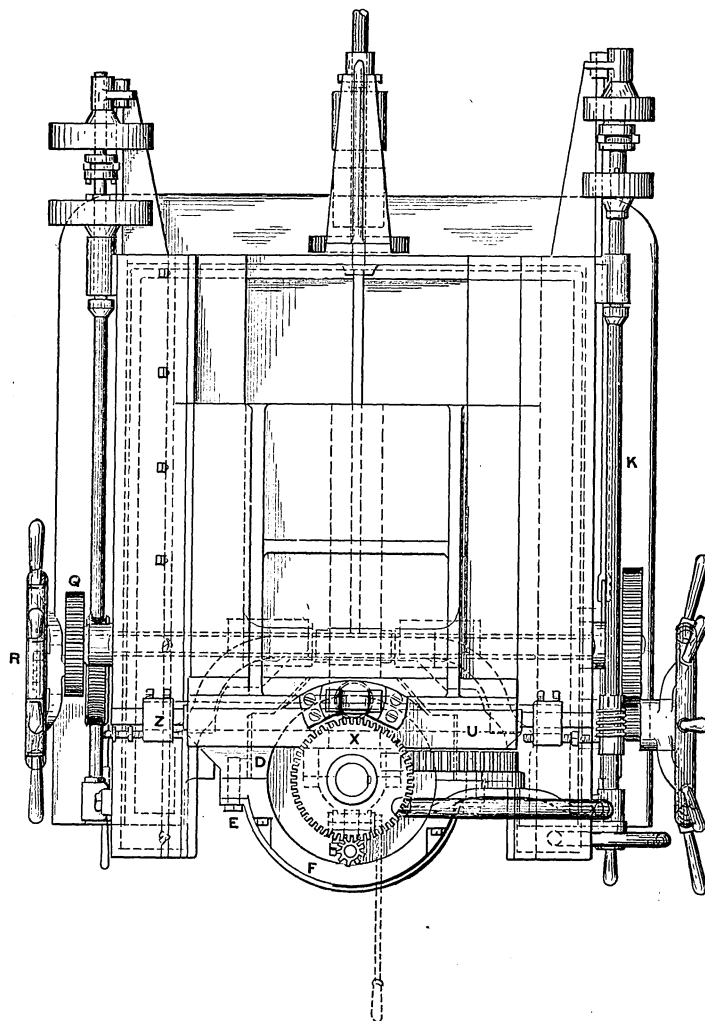


Fig. 3.—Plan.

UNIVERSAL METAL WORKING MACHINE.

corporation had a paid-up capital stock of \$1,500,000, which they returned for taxation to the Auditor General in 1891 at a value of \$18 per share, being a little higher than the market price at that time. The report showed the net earnings of the company to have been \$842,215.12. The State officers upon a construction of the law adopted by them held that the capital must be taxed at such sum as would at 6 per cent. produce the net earnings reported, and on this basis they raised the value of the capital stock to \$1,700,000 and imposed a 5 mills tax upon the same, amounting to \$88,000. In the opinion just filed the court considers the evidence which showed the uncertain character of natural gas companies' business, and practically holds that net earnings of such companies, a large part of which are required to be expended in procuring new gas wells to keep up

face of the bath. This disposition of apparatus is the invention of Mr. Burton, and has been appropriately named the "water pail forge." The circuit employed by Mr. Burton in his experiments was the 220 volt Edison incandescent service. With the apparatus installed in the manner described above Mr. Burton successfully exhibited the efficiency by heating to bright incandescence, and even to fusion, in from ten to thirty seconds, rods and bars of iron, steel, copper and carbon. The metal objects were then forged, welded, &c., in the anvil.

Duluth News.

There is an appearance of cheap ore on the ore buyers' horizon, whether the Democrats succeed in passing free ore or not. It is understood in Duluth that

Work has not been resumed as yet at any of the Mesaba mines, though the appearances indicate that several will start up shortly. Several Cleveland men, including F. Rockefeller, Jas. Corrigan, Price McKinney, E. C. Garlick, all of whom are in the Franklin and Commodore mines, have been in the city and have made arrangements for starting the Franklin at an early day. At the Commodore, however, the pumps have been pulled out and the mine will be allowed to fill. These two mines instance the difference between free and leasehold properties. The Franklin's main body is a fee, while the other is subject to a 30 cent royalty.

Nativities of the Iron Miners.

Some statistics published by the Ironwood, Mich., *News Tribune*, respecting the nativity of the unemployed in that town and its immediate vicinity, are interesting. There are in the county of Gogebic, in which Ironwood is situated, 5447 persons receiving aid. These persons are receiving charity because of the fact that the iron mines in the county, which formerly furnished employment to the heads of the families, are shut down and the miners are out of work. The Ironwood paper gives the following table of the number of persons, by nationalities, who are dependent upon charity :

	Wakefield.	Ironwood.	Bessemer.	Total.
Poles .....	43	268	315	626
Fins .....	168	448	126	742
Italians .....	60	92	102	254
Germans .....	..	260	109	369
Bohemians .....	..	209	74	283
Scandinavians .....	75	859	77	1,011
Irish .....	35	701	56	792
Hungarians .....	..	22	12	34
French .....	16	210	25	251
English .....	54	633	151	838
Slavs .....	..	27	..	27
Americans .....	5	44	14	63
Syrians .....	..	14	..	14
Austrians .....	..	79	12	91
Scotch .....	..	11	..	11
Hollanders .....	..	..	10	10
Welsh .....	8	..	..	8
Totals .....	486	3,878	1,083	5,447

There are but 63 native Americans in a total of more than 5000 persons who are either miners or of the families of miners.

Simon Dessau, importer of carbon and bortz, of New York City, known as the "Carbon King," made an assignment this week. Mr. Dessau, who made a specialty of black diamonds for drilling purposes, has had for the past 20 years a practical monopoly of this trade in the United States. His failure is attributed to the general depression in business and heavy losses by indorsements for other parties which they were unable to meet.

Superintendent Davton of the Bloomsburg Car Works, Bloomsburg, Pa., claims that those works lately beat all former records in building two eight-wheel flat cars, giving them three coats of paint and lettering them within 29 hours.

By the terms of a bill now before the Senate the Naval Observatory at Washington is to be transferred and placed under the care of the Board of Regents of the Smithsonian Institution.

The total amount of paper currency outstanding in the United States on January 31 was \$1,167,040,231, less about \$1,000,000 estimated to have been destroyed by fire. This shows an increase during the month of nearly \$7,000,000.

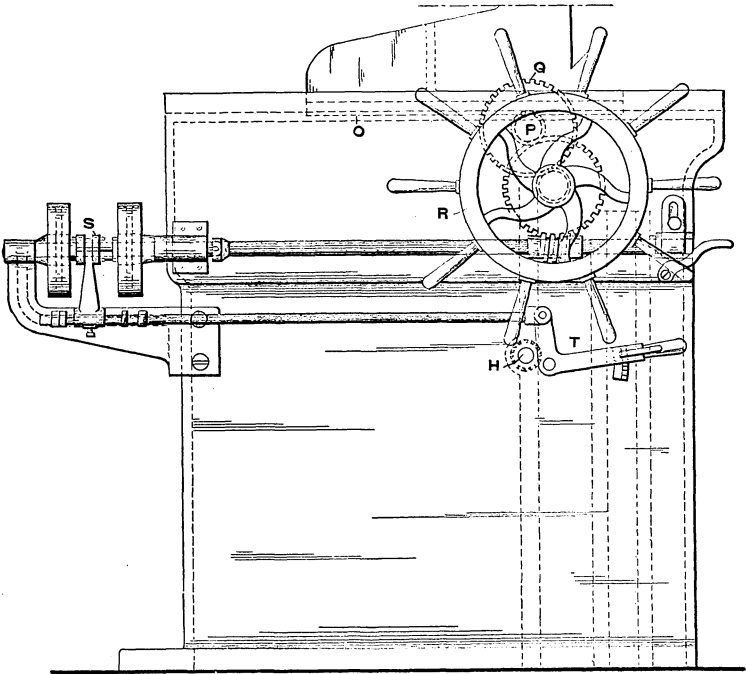


Fig. 4.—Side Elevation Opposite to Fig. 2.

UNIVERSAL METAL WORKING MACHINE.

the supply, are not to be applied upon the construction of law asked for by the Commonwealth.

The "Water Pail Forge."

At the annual meeting of the Franklin Institute, George D. Burton of Boston read a paper descriptive of his method of heating metals by the employment of a saline electrolytic bath as a resistance. He proceeded to give an extremely interesting practical demonstration of the method, with an apparatus consisting of an ordinary wooden bucket containing a saturated aqueous solution of a mixture of sal soda and borax, a lead plate connecting with the positive terminal of a direct current serving as the positive electrode (or anode), and the metallic object to be treated connected with the negative terminal of the circuit serving as the negative electrode (or cathode), the circuit being completed through the salt solution, where the metallic article forming the cathode is brought in contact with, or immersed beneath, the sur-

face of the bath. This disposition of apparatus is the invention of Mr. Burton, and has been appropriately named the "water pail forge." The circuit employed by Mr. Burton in his experiments was the 220 volt Edison incandescent service. With the apparatus installed in the manner described above Mr. Burton successfully exhibited the efficiency by heating to bright incandescence, and even to fusion, in from ten to thirty seconds, rods and bars of iron, steel, copper and carbon. The metal objects were then forged, welded, &c., in the anvil.

one of the great ore producers, a company that has been in business a number of years, has a very high grade ore, which is of remarkably uniform quality and in favor with producers, stands ready to offer a Minnesota standard Bessemer at Cleveland at \$2.50 a ton, and that they have 500,000 tons to place at this figure if necessary. This price is equivalent to about \$2.40 for the average Mesaba Bessemer, at which price, it is said, some Mesaba ore is offered at Cleveland. Of course, there is no profit even at the present wage rate in such ore, and there is an actual average loss on Mesaba ores of not far from 50 cents. It looks much like a sharp battle on the part of some of the Mesaba interests, which are at present weighted down by all the charges incident to rapid development of new territory and new mines.

But if ore from either of the Minnesota ranges is to be delivered at Cleveland at any such price as is here instanced, from whatever cause, the fact cannot fail to be disastrous to properties on other ranges that have long been considered profitable and safe from too keen competition.



### The Development of the Iron and Steel Roofing Industry.

Not long since we drew attention to the remarkable increase in tonnage of iron and steel roofing produced in the United States at the present time compared with 12 years ago, at which time there were only a few iron roofing concerns in existence. Now they are distributed all over the country. In the early days of the industry each manufacturer had some special design of roofing upon which his attention was concentrated, and these specialties are still before the trade, but so numerous are the designs patented and so good are the claims of each, generally speaking, that the manufacturer himself is often puzzled as to which special kind of roofing he shall push the sale of in preference to others. When each maker had only one or two lines to offer a four page circular printed in two colors was considered an enterprising step, but now the smallest concern will not hesitate very long about publishing 40 to 80 page catalogues, which are usually fine specimens of typographical art. When salesmen first made the acquaintance of consumers of roofing they had little else to offer besides iron roofing and red oxide paint. To-day roofing salesmen offer a full line of metal roofing and specialties. In their catalogues will be found various styles of rolled roofing, iron and steel, prepared ready to lay, tools loaned for the purpose. A few specialties in standing seam roofing, V-crimped, corrugated, beaded and other kinds. Then will follow supplies, such as paints, nails, felt lining, ridge roll, ridge cap, &c. In ornamental designs there are painted sheets, pressed to imitate brick or weather board, also handsome designs for ceilings and galvanized sheets pressed to imitate rock face, steel shingles, plain and ornamental, and a variety of metal roofing in other designs. Other adjuncts to the roofing manufacturer's business are galvanized conductor pipe, eave trough, miters, cornices, finials, and, in fact, anything and everything in the shape of sheet metal goods required for finishing a building. Many of them have added galvanized and black sheets, flat, to their catalogues, also tin and terne plates.

As the early manufacturer has developed his lines of manufacture and general business methods so has he developed his machinery and arrangements for producing goods at the lowest possible cost. He loses no time at any stage. The best machinery obtainable is purchased and a large tonnage is produced for small labor expenditure. He advertises freely and well, and his salesmen are so fully prepared that a good man has every opportunity to sell something or other in each town he visits.

There is probably no other business in which the consumer comes into such direct contact with the manufacturer. The proportion of iron and steel roofing handled by jobbers is very small. They handle very little of the \$6,000,000 passed annually between consumers of iron and steel roofing and manufacturers.

*The British Roofing Trade.*—Corrugated iron was the first form in which iron sheets were applied to buildings for roofing purposes in large quantities—i. e., it was the first staple commodity for the purpose listed in trade papers of Great Britain and its colonies. In its flat form sheet iron has been used for roofing purposes ever since its introduction. The trade of India, Australia,

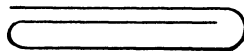
New Zealand and Canada has furnished orders of great value to the English Ironmasters for many years past and they continue to enjoy this trade, but their products have in the course of time assumed a different shape. At one time all orders from British India and the East were standard specifications. Merchants were unable to figure ahead in regard to special specifications for various purposes and nine-tenths of the orders were made up in sizes easy to handle and transport either by ocean, railroad or camel back. A very familiar size was 4 x 2 feet. This size served any and all purposes of British India, Burmah, Egypt, Northern and Southern Africa and any other part of the world under submission to England, where the English language was not spoken generally or civilization was kept down to the standard desired by British traders.

The uses to which this material was put do not come strictly within the business of iron roofing, but many of the gauges shipped were used for that purpose. An ordinary specification for export sent to an English rolling mill would read about as follows:

	Per bundle.	Approximate thickness.
4 x 2 feet by 112 pounds, 1 sheet	=	3-8 inch.
4 x 2 feet by 112 pounds, 2 sheets	=	3-16 inch.
4 x 2 feet by 112 pounds, 3 sheets	=	13 gauge.
4 x 2 feet by 112 pounds, 4 sheets	=	15 gauge.

and so on up to 14 sheets per bundle, the last named representing No. 26 gauge, which was the lightest gauge ordered. Although transgressing somewhat beyond the purpose of this article, it is a means to an end—viz., to refer to foreign development in the iron and steel roofing industry parallel with American development. British colonies and dependencies have always accepted what traders offered no matter whether the sizes suited their requirements or not. American consumers are nearer to the source of supply and make demands for the class of material which conforms to their ideas of what should be furnished, hence the difference in development of the industry in England and America. The ritual of the British trader is that if a certain thing has pleased a buyer once it must please always, and he will not change his notion until he realizes that a trader from some other nation is getting the best of him. Britishers have a strong hold upon foreign trade for all classes of iron and steel products, and will not change their specifications except under great pressure. In Spanish, Spanish-American and Brazilian trade this is amply illustrated. To these countries the sizes of sheet iron are always made under the metric system: Two meters long by 1 meter wide is the regular size (6 feet 6½ inches by 3 feet 3¾ inches) and sheets of this size are cut up for any purpose for which they may be needed. The lightest gauge ordered is about 28 gauge, eight sheets to the bundle, 112 pounds.

The two kinds of specifications referred to are common orders for export trade. The lighter sheets are used for roofing purposes and the heavier for general purposes. In the first specification the bundles of light gauges are often doubled up so as to be transported on the backs of camels, and the heavy plate, such as 4 x 2 feet by ¾ and 1 inch, are bent hot into the following shape:



Ropes are passed through the folds to make secure on camels' backs, and

the material is thus carried across the desert. The sheets which are used for roofing purposes are usually painted white after being applied.

Flat sheets for roofing purposes form but a small part of England's trade in this line. Corrugated sheets are staple in the markets of British exporters. Orders for black or painted are seldom heard of. Nearly all corrugated sheets shipped from Great Britain are galvanized. The trade is enormous. Everything is corrugated. Standing seam roofing is almost unknown. Steel or iron shingles (slates, as they are called in England) are occasionally heard about, but the bulk of the trade is galvanized sheets and almost the entire product is sent abroad, Australia, South America and India furnishing the best customers. For shipment the sheets are placed in felt lined crates, each containing about 1120 pounds (½ gross ton). The material is generally iron, not steel. Most of the galvanized sheets made in Great Britain are from muck bar piles with a top and bottom of wrought iron turnings or scrap worked on cinder bottom. The bars are rolled free from scale and the same care is taken in rolling sheets. The English claim, and no doubt justly, that sheets made in this manner are better for galvanizing purposes than steel. It is a common error among Americans to judge galvanized sheets by the size of the spangle. If the spangles are large it is a sure indication of a smooth surface of steel or iron, as the case may be, but a sheet having smaller spangles may give longer service for the reason that the coating adheres more firmly. For some purposes the steel sheet with its brilliant spangles is preferable, but for outdoor work the iron sheet with its smaller spangles of greater adhesive quality is to be desired, always provided that the iron sheet is tough and pliable.

*English Corrugating Machinery.*—English manufacturers of corrugated sheets do not use rolls for the purpose. Presses are used exclusively. Fig. 1 illustrates a common design of corrugating press used in England and Scotland. In the matter of strength, judged from a weight of metal standpoint, it would outclass any two American machines in existence. Britishers never spare metal in a machine of any description. No matter for what purpose it is intended, its strength is judged first by its weight, whether properly distributed or not. This is a blunt assertion, but, nevertheless, true. Witness lathes, machinery, agricultural implements, or any other class of heavy tools exhibited by British makers at the World's Fair, or compare vehicles for pleasure or business. There is nearly always twice as much iron or wood used as in American manufactures used for similar purposes. The Britisher is always "afraid it will break." If the corrugating machine illustrated in Fig. 1 breaks with anything lighter than No. 12 gauge worked upon it the cause will be culpable negligence in its adjustment. The plunger A is solid cast iron; to this the upper die is attached. This die makes two corrugations of ordinary size. The lower die is fixed to the bed B, which is also made of cast iron. Contrary to the rule adopted in American machines, the driving shaft is at the bottom of the machine (note shaft C) and the motive power is placed at the side, bedded on the ground, instead of being attached to the machine above the heads and out of the way of operators. When changing from one thickness of sheet to

another the difference is adjusted by means of adjustable screws, D. When corrugating sheets as light as No. 28 gauge six are placed in the machine at one time. It must here be stated to the credit of Britishers that their standard gauge is nearer to No. 24 than No. 28,

strictly products of American ingenuity with the exception of corrugated sheets. No ideas have been borrowed from any other country and no other country has developed the industry to such an extent. In fact, it is doubtful whether any other industry known to the world

and still maintains its prestige as the largest producing center. Corrugated iron was made in Pittsburgh and the East 25 years ago, but only in small quantities. The importance of the iron and steel roofing business in America dates from that time. In 1868 the firm

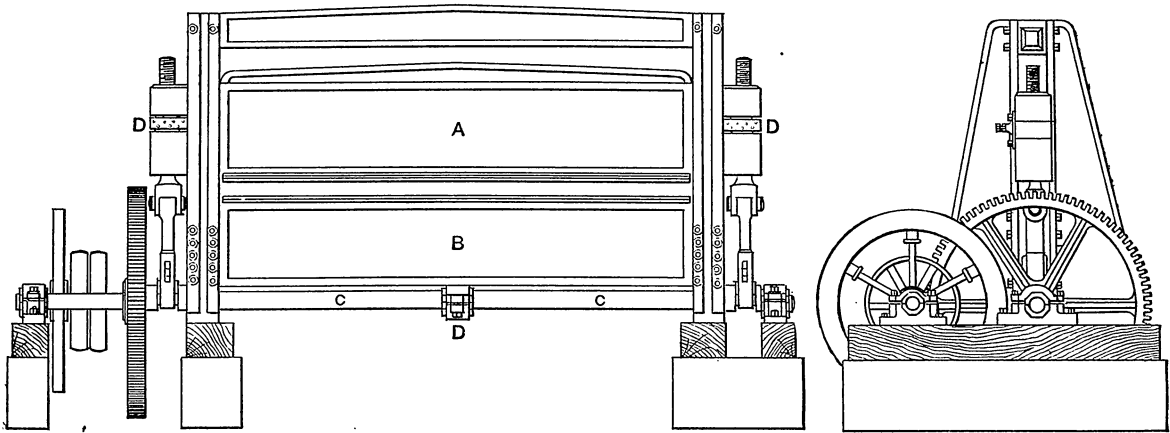


Fig. 1.—English Corrugating Press.—Length of Die, 10 Feet 3 Inches.

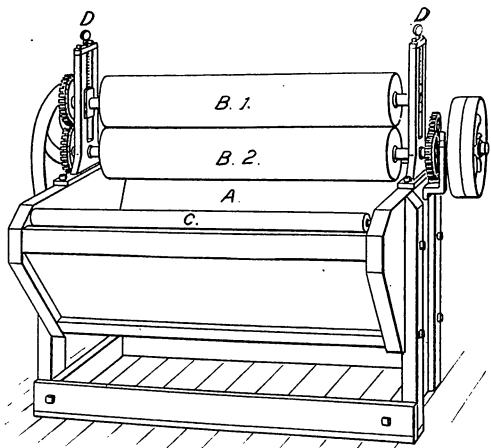


Fig. 2.—The Modern Painter.

of Caldwell & Co. was established in Cincinnati. They made rolled edge roofing by hand power. The design was known as "outcalt" pattern and the machine used passed into the possession of the Cincinnati Corrugating Company after the death of Mr. Caldwell in 1883. The machine has since been destroyed, but the last named company continue to manufacture that style of roofing. Mr. Caldwell's death caused a dissolution of the firm, and the honor of being the oldest roofing concern now belongs to the Porter Iron Roofing & Corrugating Company. Immediately after Caldwell & Co. started in business W. S. Belt commenced operations. In 1876 Mr. Belt's business was sold to W. H. Porter, the present secretary of the Porter Iron Roofing & Corrugating Company. The Porters consequently have the oldest roofing

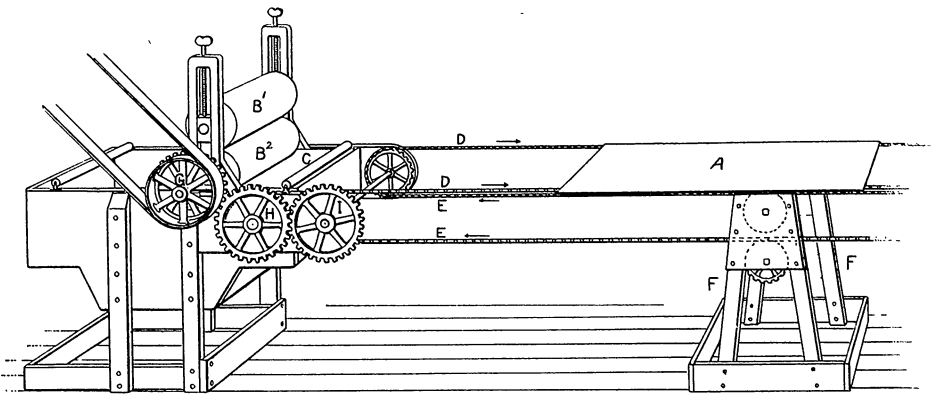


Fig. 3.—Sheet Carrier Attached to Painter.

THE DEVELOPMENT OF THE IRON AND STEEL ROOFING INDUSTRY.

and sheets as light as the latter gauge are the exception rather than the rule. The standard adopted recently by the National Iron Roofing Association is No. 28 painted sheets. The bulk of English orders are No. 26 galvanized.

*The American Roofing Trade.*—The variety of forms into which iron and steel roofing is made in this country are

was developed in such a degree in so short a space of time. The active history of the industry does not date back more than 15 years, although it struggled against prejudice 10 years prior to that time.

From the best information obtainable it is learned that Cincinnati, Ohio, was the first important seat of the industry

business of Cincinnati and are the original makers of V-crimped roofing in the United States. In 1873 Scott & Co. started an iron roofing manufactory in Cincinnati and the concern are still in existence. Other concerns still doing business at their old stand are: W. G. Hyndman & Co., established 1877, and the Globe Iron Roofing & Corrugating

Company, who commenced business about 1880. Several other concerns were formed between 1875 and 1880, but they are now out of existence. About 1878 the New York Iron Roofing Company moved to Cincinnati from Ironton, Ohio, and were afterward succeeded by the Sagendorph Company, now known as the American Roofing Company.

Among the most successful of Cincinnati roofing companies were the Cincinnati Corrugating Company, established about 1879. They were the first company to make a specialty of corrugated iron, and they did such an exten-

brisk competition, that has brought the cost of iron or steel roofing far below that of shingles or slate. The first important step taken by roofers was in the matter of painting sheets. At first all sheets were laid across trestles and painted by hand. Plenty of paint was used, but it was not evenly distributed. It was heavy and light, in patches, it dried slowly and was not satisfactory. Boys were usually engaged in the work and they generally managed to get as much paint upon their clothing and on the floor of the painting shop as they did upon the sheets.

when the old has worn thin, or the raising distance of the upper roll can be adjusted to sheets of varied thickness. To facilitate the operation rollers C are placed on either side of the paint tub. This first step toward improvement was important, but roofers still found it expensive to carry sheets from the painter to the drying racks. So much room is required for drying that buildings for the purpose vary from 100 to 600 feet in length. If the painter is located at the end of the building where black sheets and painting material are received, as it should be, it is expensive to carry

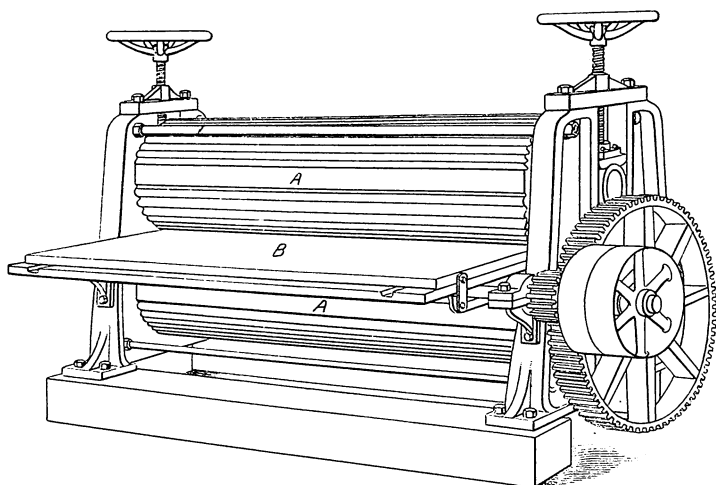


Fig. 4.—Corrugating Rolls.

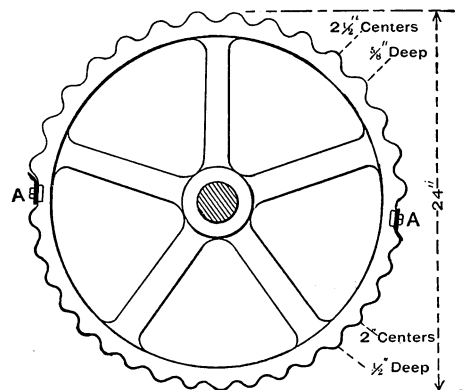


Fig. 5.—End View of Corrugating Roll, Showing Guides.

sive business that they were compelled to move to more roomy quarters a few years ago. They selected Piqua, Ohio, for a site, and their entire business was moved to that point, where operations are continued in connection with the Piqua Rolling Mill Company, from whom their supplies of iron and steel sheets are drawn. The removal of this company withdrew a large tonnage from Cincinnati, but it is still the largest producing center. Other important seats of the industry are St. Louis, Chicago, Cleveland, Ohio; Niles, Ohio; Wheeling, W. Va., and Canton, Ohio. The roofing works of M. H. Chittenden & Son, Minneapolis, are the nearest to the Pacific Coast and Northwest.

The number of manufacturers engaged in the iron and steel roofing business has increased from 20 to 60 in 12 years, and the quantity of sheets used for the purpose from 20,000 to 100,000 tons.

*American Machinery.*—American manufacturers have made wonderful changes and improvements in sheet metal working machinery, not only in the roofing business, but all other branches. The number of manufacturers of iron and steel roofing has shown an increase during the past few years fully equal to the growth in the demand for such material, if not greater, and the older manufacturers, desiring to maintain their prestige, have adopted economical methods of production in order to distance new competitors. This competition, together with lower values of iron and steel sheets, has made iron and steel roofing cheaper year by year, and competition is no longer with the slater or shingle splitter. It is confined to the iron roofers themselves. The increased number of manufacturers engaged in the business, improved machinery and lower prices of iron and steel sheets have caused

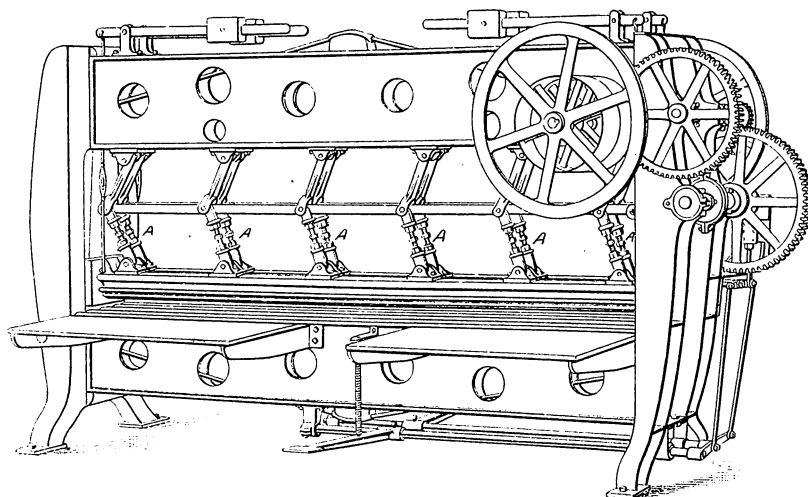


Fig. 6.—Corrugating and Forming Press.

#### THE DEVELOPMENT OF THE IRON AND STEEL ROOFING INDUSTRY.

*The Modern Painter.*—The modern painter here illustrated was designed by W. G. Hyndman, the veteran iron roofer of Cincinnati, Ohio. The method of operating is simple. Tub A, Fig. 2, is filled with paint. In feeding sheets to the painter, the end of the sheet is dexterously dipped by the operator into the paint so as to catch up the smallest quantity possible, and is then passed through rolls B1 and B2. These rolls are covered with canton flannel, which absorbs the paint and distributes a very even coat over the sheet. The lower roll B2 is fixed in a stationary journal, but the upper roll B1 is adjustable, turning in a movable journal box. By raising screws D room is allowed for a new covering of flannel

sheets the full length of the building. To decrease this expense the chain carrier illustrated in Fig. 3 was devised. It is very simple in construction. A few supports are required, placed about 12 feet apart, a few hundred feet of link belt and some sprocket wheels. The motive power is derived from a cog wheel placed on shaft of roll B2. This cog wheel or pinion is placed inside pulley G, and operates cog wheel H, which in turn causes pinion I to rotate in the desired direction. This pinion is fixed upon an extension on the paint tub, the shaft is carried through to an extension on the opposite side of tub and two sprocket wheels for driving the link belt are placed on the same shaft on the inner side. Sup-

ports F carry two shafts, each having two sprocket wheels fixed on the inner sides. The link belt travels from the painter over the top of the upper sprocket wheels and returns over the top of the lower wheels, as indicated by arrow marks E and D. The sheet of painted iron A has passed through rolls B1 and B2 over the roller C to the link belt, and is thus carried, as shown in illustration, the full length of the carrier, unless removed at an intermediate point to be placed in the drying racks. By this process one man can feed sheets to the painter as fast as six men can remove them from the carrier. The average capacity is 500 sheets per hour. Since the average weight of the sheets used is 12 pounds, the capacity is 60,000 pounds per ten hours. The men employed to carry sheets from the carrier to the drying racks stand on either side about 25 feet apart, so that each gets his sheet in rotation and there is no waiting.

**Corrugating Rolls.**—When corrugating rolls were first introduced they were made small in diameter and did not corrugate the sheets perfectly. This was due to the spring in the rolls, which were cast hollow. This caused a twist in the sheets, which prevented a perfect fit when placed together. A pair of rolls relegated to the scrap heap a short time ago were only 18 inches in diameter. Rolls now made are more than twice as large. The old style corrugating rolls were only made for one size of corrugation, and separate pairs of rolls were kept in stock for various sizes. Machines are now constructed so that several different sizes can be made by changing the shell of the rolls without taking the barrel from its position. The corrugating rolls illustrated in Fig 4 are known as double corrugating rolls, one-half of each roll being for one size of corrugation and the other half for another size, the division being at flat part A.

The sheets are fed to wrought iron guides, A A, in the accompanying sketch. These guides are set in the flat part of rolls, and are slotted so that they can be moved forward or backward as required, so as to make the first corrugation either full or half corrugation, as may be desired. This improvement insures accuracy in fit of sheets, as each side corrugation will be exactly alike, provided the sheets are sheared square.

**Corrugating Presses.**—Fig. 6 illustrates a modern style of corrugating and sheet metal forming press. It is a much lighter machine than the English corrugator illustrated in Fig. 1, but the strength is so evenly distributed to required parts that it is capable of corrugating or forming sheets as heavy as No. 16 gauge. In the English machine the plunger A is solid. When it descends it makes two corrugations, the draw in the sheet being allowed for by making the corrugation on the finishing side deeper than the corrugation on the near side. Each corrugation is finished in the groove on the finishing side. In the American machine the plungers A do not each descend at the same time. The plunger on the back side descends first and the draw in the sheet is taken up before the plunger on the front or feed side descends. The motive power of this press is attached to the cast iron side columns of the machine out of the way of the operators, instead of being on the floor, as shown in the English machine, Fig. 1. The American press can be used for forming a large variety of designs in sheet metal

roofing and siding. The improvements referred to in this article do not by any means comprise all that have been made up to date, but are sufficient to illustrate the advanced stage of the industry compared with 15 years ago.

**The Export Roofing Trade.**—Production has been reduced to minimum cost, and a near approach to perfection attained in the quality of iron and steel roofing material. In its large variety something can be found suitable to any style of building, and the convenient shape in which it is packed makes it possible to ship to any part of the world. Up to the present time the quantity of iron and steel roofing material shipped from America to foreign countries has been very small and cuts no figure in the importance of the industry, but there is no reason why good connections should not be formed in this line of business with Central America, Brazil, the La Plata, and other valuable markets of South America. In Australia there is a wonderful field open. Iron buildings are as common there as frame buildings in America. They are made of galvanized iron usually, and are so constructed that they can be moved readily from one section of country to another. With the wonderful facilities that the United States possesses for wood and sheet metal working, there is a chance to supply Australia with cheap portable buildings constructed of wood and iron which is worth looking into. At present this trade is controlled by English manufacturers.

#### Standard Analysis of Iron and Steel.

At the World's Congress of Chemists, in Chicago, last August, following the papers of Prof. J. W. Langley, "On the Work of the Committee on International Standards for the Analysis of Iron and Steel," and of Dr. C. B. Dudley, "On the Need of Standard Methods for the Analysis of Iron and Steel, with Some Proposed Standard Methods," was a brief discussion, which resulted in the reference by that body of the whole subject of standard methods for the analysis of iron and steel to the Committee on International Standards for the Analysis of Iron and Steel. That committee consists of seven chemists in each of five different countries—namely, England, France, Germany, Sweden and the United States. The American committee was appointed jointly by the American Society of Civil Engineers and the University of Michigan, with Prof. J. W. Langley, Case School of Science, Cleveland, Ohio, as Chairman. The other members of that committee were W. P. Barba, Midvale Steel Works, Nicetown, Philadelphia, Pa.; A. A. Blair, 406 Locust street, Philadelphia, Pa.; Prof. Regis Chauvenet, president State School of Mines, Golden, Col.; Prof. T. M. Drown, Massachusetts Institute Technology, Boston, Mass.; Dr. C. B. Dudley, Chemist Pennsylvania Railroad Company, Altoona, Pa., and Porter W. Shimer, Easton, Pa. Following the reference of the subject to this committee it was decided after consultation to appoint a subcommittee to take up the question of standard methods. The subcommittee is constituted as follows: W. P. Barba, A. A. Blair, T. M. Drown, Porter W. Shimer and C. B. Dudley, chairman. The subcommittee held an organizing meeting at the office of A. A. Blair, Philadelphia, on December 13, all the members being present. The

object of the meeting was to map out the work. It was agreed as follows:

1. That Mr. Blair should submit a form of circular to go to the iron and steel chemists of the country, asking for a brief outline of the methods which they prefer, and the reasons for all the important points of their methods.

2. That the work of the committee should comprehend the recommendation of standard methods to be used as the basis of commercial transactions, and when any of these methods could not be used in steel works in daily practice, on account of time required, an alternative rapid method should be recommended and its limitations defined.

3. That the members of the committee should draw up each proposed standard method in writing with some minuteness, and give the reasons for each important point, these written drafts to be sent to the chairman, to be duplicated, and sent to every member of the committee. Later the points agreed upon are to be edited by some one member of the committee.

4. That only one element should be embraced in a method.

5. That the first method to be taken up should be phosphorus in steel.

6. Mr. Barba offered to furnish to each member of the committee a suitable quantity, not less than 1 pound or so, of borings of three different kinds of steel—namely: One of from 0.01 to 0.02 phosphorus; carbon, about 0.90, and silicon about 0.40; another with phosphorus not far from 0.06; carbon, 0.50 to 0.60; silicon, 0.25 to 0.30, and arsenic, 0.15 per cent. The above two, to be crucible steel. Another sample of open hearth steel of carbon 0.90 to 1.05; phosphorus, 0.02 to 0.04; manganese, 0.30 to 0.40; silicon, 0.20 to 0.25; sulphur, 0.02 to 0.04, and copper anywhere below 0.10.

7. Dr. Dudley offered to furnish to each member of the committee a like amount of borings from a sample of Bessemer steel of from 0.10 to 0.12 phosphorus; carbon, about 0.50; manganese, 0.80 to 1.00; silicon, 0.02 to 0.05; sulphur, 0.07 to 0.10, and copper from 0.07 to 0.10. These samples of steel to be used in deciding various questions that may come up in regard to proposed methods.

#### Paint for Iron Work.

In the course of a paper read by W. Thomson at a recent meeting of the Manchester Association of Engineers, on the different paints and varnishes used for the preservation of structural iron and steel from rust, the author stated that from experiments made by him he had arrived at the conclusion that red lead paint is the best preservative. This result had struck him as remarkable, because red lead is a highly oxidizing substance; but the reason was found to be that the red lead had the effect of producing a skin of the unoxidizable and protective black or magnetic oxide on the iron itself under the paint. The author also found that other oxidizing agents, such as manganese dioxide, form a paint which preserves iron from rusting; and this discovery he regards as of great industrial importance. Mr. Thomson explained that, having been required some time ago to make a considerable number of experiments to ascertain the most suitable paint for protecting a large iron structure from the action of sea water spray and rain, he arrived at the conclusion that red lead paint was the best he could find for the purpose.

### Vertical Independent Jet Condenser and Air Pump.

The type of vertical independent jet condenser and air pumps here shown is manufactured by the Philadelphia Engineering Works (Ltd.) of Philadelphia. The size illustrated has a 12 x 12 inch internal crank vertical engine. On each end of the shaft is keyed a fly wheel 5 feet in diameter, and in each fly wheel is inserted a pin in line with the crank. One of these fly wheel pins is directly on the upper center, with the engine crank, while the other is on the lower center; thus the cranks of the pump travel coincident with the crank pin of the engine, and the other is directly opposite. The engine being double acting and the pump single acting, one pump going up while the other is going down, presents a fairly even distribution of work upon the engine. Hence the engine turns very steady, although the fly wheels are small. The pumps are brass lined and brass fitted throughout, even the guides being brass lined, and the cross head being of brass, to resist salt or brackish water.

The pumps are 23½ inches in diameter, and have a stroke of 10 inches. The object in making the diameter very large and the stroke small is to obtain a large valve area in comparison to the displacement of the piston.

The condenser is provided with a series of plates, upon which the injection water falls. The first plate is central and the next is an annular ring, with space inside and outside. The next, a central plate; the next, another annular ring, and the next a central plate. By this means the water is required to flow in sheets and give a large exposure before collecting in a solid mass at the bottom, from which it is drawn by the air pumps.

No foot valve is provided on these pumps. The plunger descending into the water lifts first the body of water, which is followed by air and vapor. By this means a first class vacuum is effected, and a vacuum of 27 inches can be guaranteed at sea level, with water at 60° F.

The upper cover of the pump, in which is provided the guide for the cross head, can be lifted for examination of the upper plate, and the other plate can be lifted away from the pump so as to get at the plunger. By this means the entire pump is accessible from the top, but to examine or to introduce a valve it is only necessary to remove the hand plate provided for that purpose.

The floor line of the pump is shown in the drawings. The air pumps themselves are intended to be placed in the cellar of the engine room, to which the condensed water and condensed steam is conducted, thus keeping the exhaust piping out of the engine room and at the same time keeping the condensing engine above the engine room floor, where it can be oiled and otherwise attended to. This, for a general plan, is considered better than to put the engine between the two pumps and on the same horizontal height, which plan is also adopted by the builders where height is a consideration, and where the air pumps are placed by necessity on the floor of the engine room. The latter plan then gives a neater appearance. The illustrated type of engine would be rather ungainly in appearance, on account of its great height, if the foundation plate of the air pumps were on a level with the engine room floor.

This size pump is operated at 70

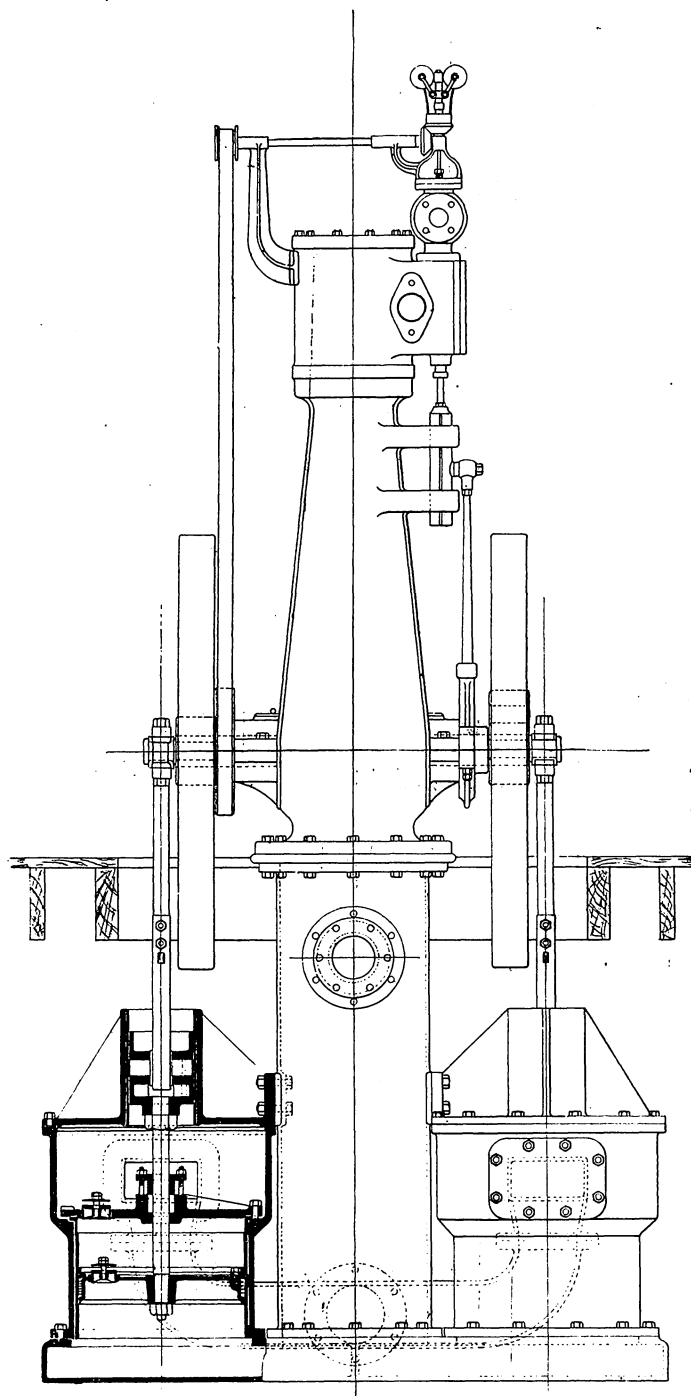
revolutions and is suitable for a 1000 horse-power compound engine. Several sizes of this pump are built, ranging from 150 horse-power up.

### Steel in Electric Machines.

H. F. Parshall has contributed to the *Journal of the Franklin Institute* a

economy, the principal reasons being that this class of machinery is not restricted as the above classes as to size, form or weight.

The ratios of permeability and cost per pound of steel and cast iron, as used in best practice, show a margin of about 20 per cent. in favor of the use of steel. The ratios of the permeability to the cost of steel and wrought



Sectional View of Air Pump.

### VERTICAL INDEPENDENT JET CONDENSER AND AIR PUMP.

highly interesting article on the use of steel in electric machines. He dwells on the revolutionary effect which the introduction of steel castings has had upon the form of street car motors, while corresponding changes have been made or are contemplated in stationary motors. In the case, however, of generators the advantages obtainable from the use of steel are less marked, both from the standpoint of form and of

iron forgings of simple form show a margin of 20 per cent. to 25 per cent. in favor of the use of wrought iron.

Reasoning from the above and neglecting any difference in machining, it would appear that magnet frames constructed entirely of steel would be cheaper than those constructed of cast iron. Further, the difference is considerably increased on account of the greater amount of copper required in

the magnetizing coils of a cast iron machine, this increase being due to the greater length of turn of the magnetizing coils on account of the greater section of the cast iron required to support a given magnetic flux. In the conditions obtaining at the present time steel magnet frames and magnetizing coils cost only about 75

facilities both as to shipping and handling in the shop.

In considering the question of the quality of steel for castings Mr. Parrish reaches the conclusion that good steel should not exceed the following: Carbon, 0.25; manganese, 0.60; silicon, 0.20; phosphorus, 0.08, and sulphur, 0.05, per cent. Carbon is the most ob-

jectable impurity. From the plotting of a large number of tests and analyses it was evident that the falling off in permeability was proportional to the amount of carbon contained, and by diminishing the amount of carbon, other conditions remaining the same, there was a corresponding increase of permeability. Manganese below 0.6 per cent. seems to have but little effect. The presence of manganese in large

quantities deprives the steel of nearly all magnetic susceptibility. Silicon at the magnetic densities used in practice is less objectionable than carbon, but at high densities it appears to diminish the magnetic qualities of iron to some extent. Its presence is objectionable in that it facilitates the formation of blow holes, and, like manganese, has a hardening effect, rendering the steel hard to tool. Phosphorus and sulphur, limited to the amounts stated above, are not objectionable.

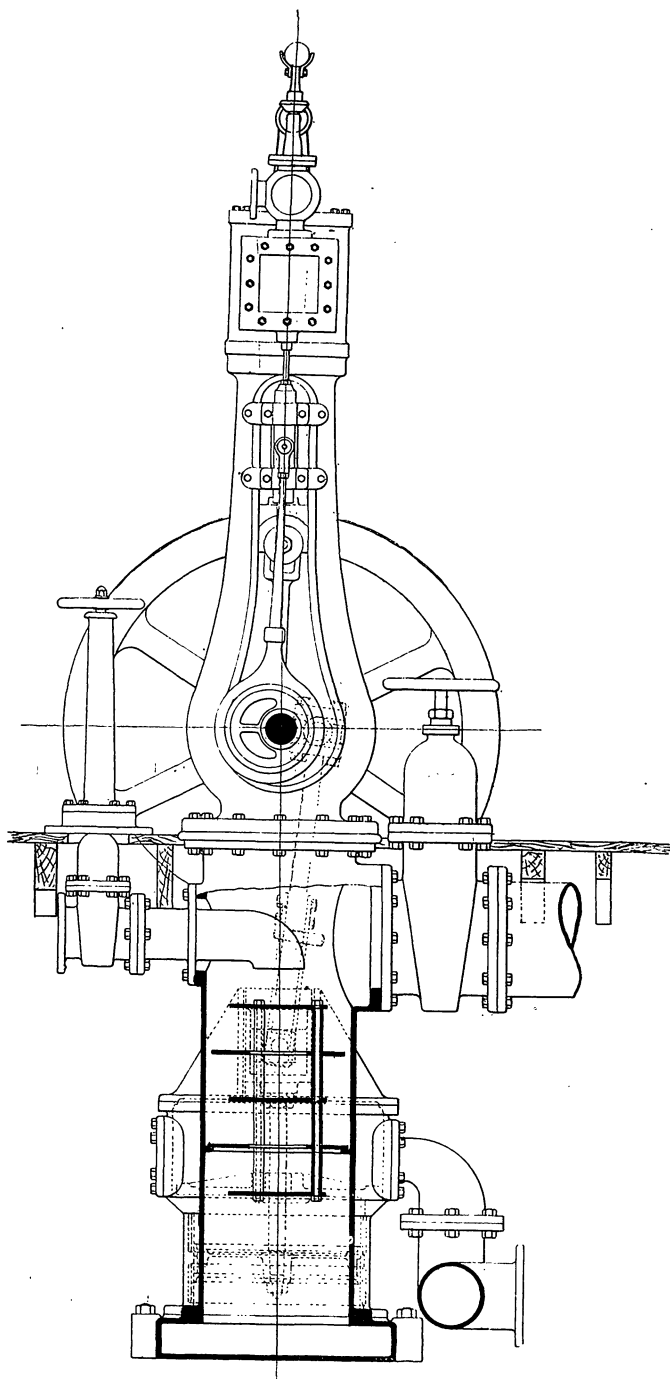
The effect of annealing on the permeability of cast steel varies considerably, according to the treatment at the foundry. In an ordinary sample annealing seems to increase the permeability for low magnetizations, but for high magnetizations the effect is less marked. The effect of tempering is to greatly diminish the permeability.

Rolled steel plates for armature cores in ordinary practice vary from 0.014 inch to 0.030 inch in thickness; in consequence, steel has to be of very good quality, mechanically, otherwise it would not withstand the rolling process. Steel to be of the most satisfactory quality must have a minimum tendency to persist in any magnetic state it may have acquired. This may be expressed in other words, by saying that the energy required to overcome the intermolecular friction brought about by changing the direction of magnetization of the iron should be a minimum. This tendency to persist in a formerly acquired magnetic state is termed hysteresis, and the amount of hysteresis is measured by the amount of energy required to completely reverse the direction of magnetization.

It is most difficult to determine the effect of the chemical constituents upon the hysteretic loss in sheet iron and steel. This is owing to the fact that with the usual compositions low in silicon, a very slight difference in the annealing will make a disproportionately great difference in the hysteretic loss, and as it is a matter of great difficulty to subject different samples to even approximately similar conditions of annealing, it is hard to illuminate this large variable effect sufficiently accurately to determine at all satisfactorily the residual effects of the chemical constituents. Silicon in the proportions occurring in sheet iron and steel is not very harmful except that it tends to prevent to a certain extent the improvement that would otherwise result from annealing. Manganese and sulphur up to a considerable amount (0.6 per cent. for manganese, and 0.05 per cent. for sulphur) do not increase the hysteretic loss. Phosphorus is especially objectionable as regards the hysteretic loss and has more tendency to increase the hysteretic loss than carbon.

Annealing has a tendency to make the structure of the iron more homogeneous, leaving the molecules freer to change their direction. Experiments have been made to show that hysteresis can be lessened from 8000 ergs per c. cm. per cycle to about 2000 by careful and continuous annealing.

With respect to the use of steel in general for magnetic purposes, it may be stated that the most valuable products are those that are found to be softest and most homogeneous. In a given sample any physical change which increases the permeability correspondingly diminishes the hysteresis. In different samples steel of the highest permeability may not give the best results as to hysteresis; thus a trace of uncombined carbon has a tendency to greatly lessen the permeability, but



*Sectional View of Jet Condenser.*

#### VERTICAL INDEPENDENT JET CONDENSER AND AIR PUMP.

per cent. of magnetically equivalent cast iron magnet frames, and as a practical example we will take the 1500 kilowatt generator, recently designed for the General Electric Company and now in operation in the Brooklyn Railway station. The magnet yoke is constructed of steel and weighs 38,000 pounds. If it were constructed of cast iron it would weigh 87,000 pounds, such a weight requiring extraordinary

jectionable impurity. From the plotting of a large number of tests and analyses it was evident that the falling off in permeability was proportional to the amount of carbon contained, and by diminishing the amount of carbon, other conditions remaining the same, there was a corresponding increase of permeability. Manganese below 0.6 per cent. seems to have but little effect. The presence of manganese in large



does not seem to greatly affect the hysteria.

The most hoped for improvements in steel are in the making of castings free from blow holes and surface defects, requiring a minimum of finish, and which are soft and easily machined. Such castings would certainly prove satisfactory from a magnetic standpoint.

## Canada's Iron and Steel Requirements.

In the Dominion of Canada, with a population of 5,000,000 descendants of the most energetic nations, with a railroad system extending from the Atlantic to the Pacific, and with a large and growing foreign commerce, the iron and steel requirements are naturally among the most important of the industrial wants of the people. Taking into account the imports of these metals in all forms with the home production of iron, it is a fair calculation that at the present time Canada's iron and steel needs represent a consumption of nearly 600,000 tons of pig iron. For reasons into which it is not now necessary to enter only a small part of this large quantity of iron is provided by Canadian furnaces. The "reproductive" branches of iron and steel manufacture have been more fully developed in Canada than the classes producing the crude materials. In 1891 the production of pig iron in the Dominion was 23,891 net tons, in 1892 it was 42,443 tons, and reports to date indicate that 1893 will show another substantial increase in the output. While this development of the blast furnace industry is encouraging to the producers and, under the fostering care of the present Government, will doubtless show yet greater progress in succeeding years, still for a long time to come Canada must rely on other countries for the larger part of the iron and steel articles which in one form or another she will need. A great iron industry cannot be built up in a day.

Leaving out tin plates on each side it will be found that in value Canada imports three-fourths as much iron and steel as the United States, although the latter country has 13 times the greater population. But then Canada's protective tariff dates only from 1887. In the fiscal year 1892, the latest for which detailed statistics are available, Canada imported iron and steel to the value of \$13,796,972. Deducting \$1,235,961 worth of tin plates it leaves \$12,561,011. The United States in the calendar years 1891 and 1892 imported iron and steel, minus tin plates, to the value of, respectively, \$16,083,321 and \$16,779,960.

The dutiable iron and steel imports of Canada have not greatly varied in value for the last three fiscal years. In 1891 they amounted to \$9,987,973, in 1892 to \$9,963,635 and in 1893 to \$9,916,041. Remembering the decline in prices in these years, the above figures represent an increase instead of a decrease in the quantities imported. In addition, Canada imports yearly between \$3,000,000 and \$4,000,000 worth of iron and steel free of duty, but the details for 1893 are not yet available.

Having these figures before him, the American manufacturer will naturally wish to know the extent to which his particular products enter into Canada's heavy import account. To this end the following table has been prepared from the official reports of the Dominion customs' department, showing the total

iron and steel entries for consumption in 1892, with the portion supplied by the United States. Quantities are given

From a brief study of this table it will be seen that the United States already enjoys almost a monopoly of Can-

*Importations of Iron and Steel and Manufactures Thereof Entered for Consumption in the Dominion of Canada during the Fiscal Year ended June 30, 1892.*

Dutiable articles.	Total entries for consumption.		From the United States.	
	Net tons.	Value.	Net tons.	Value.
Car and other axles, blanks and springs....	708	\$50,402	192	\$24,713
Bar iron.....	6,668	281,468	581	27,578
Boiler and other plate iron, skelp iron, and sheet iron not thinner than No. 20.....	2,300	76,955	162	8,960
Cast iron pipe.....	4,313	100,415	824	21,004
Chains over 9-16 inch in diameter.....	1,190	63,263	208	11,861
Ferromanganese, spiegel, and steel bloom and crop ends.....	1,311	23,930	14	323
Forgings of iron or steel n. e. s.....	199	23,894	150	17,043
Hoop, band and scroll iron.....	4,600	143,853	279	14,301
Muck bar, &c.....	3,220	56,186	13	273
Iron bridges and structural iron n. e. s.....	301	27,383	300	27,321
Pig iron and cast scrap iron.....	68,118	886,485	25,110	883,964
Malleable iron castings and steel castings.....	370	30,740	264	21,454
Nails and spikes, wrought and pressed, horseshoe nails, wire nails, and horse, mule and ox shoes.....	292	23,834	151	13,137
Nails and spikes, cut.....	187	11,668	183	11,424
Plate of iron and steel combined, and steel n. e. s.....	1,161	58,382	9	596
Plow plates of crucible steel valued at over 4 cents a pound.....	190	19,573	135	16,269
Light rails.....	3,702	111,162	1,573	53,443
Railway fish plates.....	2,614	78,036	207	8,108
Structural shapes (less than 25 pounds per yard).....	594	18,199	81	4,079
Structural shapes (not less than 25 pounds per yard).....	3,724	107,135	347	15,337
Structural shapes, bridge plates, &c., used by bridge manufacturers.....	3,358	94,953	239	8,316
Sheet iron, common, polished, or galvanized, not thinner than No. 20, and iron or steel plates not less than 1/4 inch thick.....	18,238	899,286	665	49,828
Swedish nail rods under 1/2 inch in diameter.....	840	36,080	3	179
Terne plate.....	213	12,851	8	736
Wrought iron tubes n. e. s.....	2,600	152,342	1,148	68,135
Barbed, buckthorn, and other fencing wire.....	141	8,578	99	6,328
Wire covered with cotton silk, &c.....	194	59,383	180	52,759
Wire of all kinds n. e. s.....	3,467	211,065	1,627	108,238
Wire rope n. e. s.....	293	30,577	68	12,240
Wrought scrap iron and scrap steel.....	32,628	433,695	4,252	57,337
Plate and sheet clippings for rerolling.....	2,957	47,396	1-5	6
Steel ingots, blooms, billets, bars, hoops, and sheets, valued at 4 cents or less per pound.....	6,467	235,685	982	44,050
Steel ingots, blooms, billets, bars, hoops, and sheets, valued at over 4 cents per pound.....	1,533	185,845	795	92,207
Picks, mattocks, sledges, crowbars.....	33	5,105	30	4,618
Galvanized rods, large tacks, wood screws, rivets, bolts, nuts, washers and hinges....	274	33,328	190	27,315
Total dutiable articles weighed.....	179,798	\$4,589,103	41,069	\$1,213,500
ARTICLES FREE OF DUTY.				
Iron or steel, brass or copper, wire rods, under 1/2 inch diameter, for wire manufacturers.....	11,226	461,156	750	104,884
Beams, sheets, plates and angles for ships.....	1,540	59,151	130	6,516
Locomotive and car wheel tires in the rough.....	1,380	86,294	144	8,853
Steel rails weighing not less than 25 pounds per yard.....	82,747	1,738,661	7,949	199,212
Tin plates.....	19,296	1,235,961	656	48,431
Galvanized wire and crucible steel wire....	319	30,732	11	5,045
Anchors, iron masts, wire rigging and other articles of a kind not made in Canada, when imported for use in building ships.....	1,073	53,933	275	11,856
Hoop iron for rivets, tubes for bedsteads, tagging metal, steel rods for cutlers, strips for corset springs, sheets for shovels and steel for hammers, files, skates, saws, reaper knives, &c.....	2,194	107,449	561	70,135
Total dutiable and free articles weighed.....	299,573	\$8,422,440	51,545	\$1,668,432
DUTIABLE ARTICLES NOT WEIGHED.				
Agricultural implements.....		232,932		222,618
Cast iron vessels and castings of iron n. e. s.....		86,144		78,905
Locomotives, fire engines and other engines and boilers.....		275,762		273,616
Hardware, builders' and house.....		627,453		526,738
Machines and machinery.....		1,658,238		1,427,319
Pumps, force and steam.....		44,795		44,445
Saws, scales and stoves.....		52,862		49,711
Tubing n. e. s.....	3,249,292 feet	407,974	1,641,139 feet	249,430
Stamped tinware, granite ware, &c.....		152,863		109,198
Cutlery, needles, muskets, &c.....		543,628		137,481
Tools and implements for mechanics n. e. s.....		458,392		369,775
Butts and hinges n. e. s., small tacks, cast iron forks, skates and knife blades in the rough.....		26,287		20,157
All other articles of iron or steel wholly or partly manufactured.....		767,202		507,530
Grand total.....		\$13,796,972		\$5,685,355

n. e. s.—Not elsewhere specified.

in net tons of 2,000 pounds, as this is the official custom house ton.

Canada's import market in highly finished productions, such as agricultural imple-

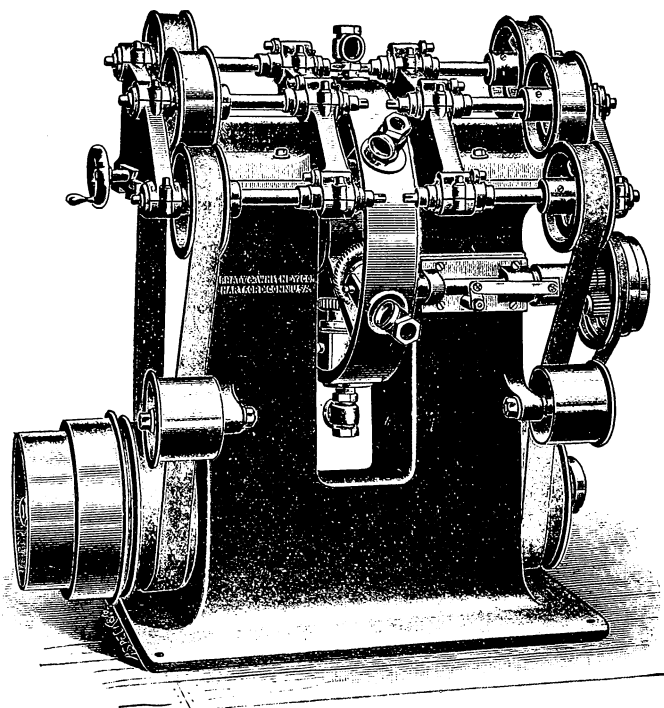
ments, engines, hardware, machinery, tubing, tools, &c., supplying over \$4,000,000 worth of these articles in 1892. The imports of agricultural implements are comparatively small, because the manufacture of these articles has been so developed in Canada that the Dominion has become a large exporter of them. In the less finished products Great Britain supplies by far the larger part, Germany and Belgium being well represented in a few specialties. In 1893, however, the United States increased its exports to Canada of some of the cruder articles. To what extent and the prospects, if any, for a continued increase in certain lines will be an interesting subject for future consideration.

Messrs Denny, shipbuilders, of Dumbarton, Scotland, have for some time adopted a scheme of awards, by which

at cheap rates, and with such rich ores large quantities could be worked up in an open hearth furnace with the charge. If this is possible India would have a great advantage over other countries through the rich ore which she possesses."

### The Bemis Patent Valve Milling Machine.

This machine is designed to mill the hexagonal sides of brass valves and nuts. The vertical turret, containing six arbors, revolves continuously with uniform motion, being driven from a three-graded feed cone. The arbors are automatically indexed twice after passing the first pair of cutters, so that three pairs of cutters mill a complete hexagon. After the first one has been milled, a hexagon is finished at every



THE BEMIS PATENT VALVE MILLING MACHINE.

they grant to the workmen in their yards a sum of money for suggestions for improvement in plant, appliances, &c., likely to facilitate or cheapen production. The system is said to have been fruitful of good results. During the year 1893 38 awards were made, amounting to about \$700. Of this sum the greater part was secured by the workmen in the iron department, those in the electrical department being the next largest beneficiaries. Since the introduction of the scheme 602 claims have been received, 313 being successful and 289 rejected. The total sum expended has been \$7105.

The question of manufacturing iron and steel in India has lately been discussed in the journals of that country. The Allahabad *Pioneer* remarks on the subject as follows: "Although the climate is not suitable for large iron works I am of opinion that the adoption of European improved methods of making steel on the open hearth system could be worked to great advantage, if mineral fuel is not prohibitive. The open hearth steel works work to advantage where pure ore is obtainable

sixth revolution of the turret. The heads of the machine have screw adjustment and each of the three spindles on each head has independent screw adjustment. The spindles and boxes are of steel, hardened and ground. The valves are placed by the operator on screw arbors and tightened by means of a hand wheel in the revolving head. This work is done while the latter is revolving. By means of a stop motion conveniently located the machine can be stopped instantly in case of accident or need of more time for placing the valves in position. The machine, which is built by the Pratt & Whitney Company of Hartford, Conn., will finish about 120 hexagons per hour. The largest one that can be milled is 3½ inches in short diameter. The machine weighs, with the countershaft, 3800 pounds.

Some years ago, says the London *Engineer*, Sir William Arrol bought the material of the old Hammersmith Bridge for the purpose of using it as temporary plant in the erection of the Forth Bridge. It had been up 63 years,

and a great many of the parts had not been painted since its erection, as it was impossible to get at them; yet those parts were in a good state of preservation—in fact, quite as good as when they left the works. He took some of the material with which it had been painted to ascertain the reason for the good state of preservation it was in, and the result of analysis was that the material with which it had been painted was genuine white lead.

### San Francisco News.

The full volume of sales of hardware, metals, &c., during 1893 fell fully 12½ per cent. short of the sales for 1892, partly owing to a decline in prices, partly to lesser sales. The actual volume of trade did not fall off to the extent that many supposed, but there was not as much money in it for those who carried it on. The area over which that trade can be carried on was, however, extended on account of the cheapening of transportation rates from New York by sea, and north and south by sea from this city. In this there is much hope for the future of the trade. Therefore 1893 was thought not prolific in profits, not entirely barren of results as far as the trade is concerned. The following table gives a fair estimate of the volume of trade in the various lines noted under it:

Agricultural Implements.....	\$2,000,000
Iron and steel.....	5,000,000
Hardware.....	1,250,000
Tin Plate.....	1,500,000
Quicksilver.....	1,200,000
Wire and wire goods.....	1,000,000
Nails.....	500,000
Various.....	750,000
Pig Tin.....	400,000
Total.....	\$13,600,000
1892.....	16,450,000

The imports for 1893 from foreign countries, except in the articles of pig tin and tin plate, have been considerably less than for 1892. The following table gives the full values as well as quantities of imports for 1893:

Pig iron, 3,538 tons.....	\$39,217
Scrap iron, 305 tons.....	4,626
Bar iron, 1,099,874 pounds.....	17,568
Railroad bars, 851 tons.....	18,206
Steel ingots, 7,607,271 pounds.....	74,931
Sheet, plate, &c., iron, 786,275 pounds.....	50,683
Tin plate, 40,068,735 pounds.....	1,155,672
Wire and wire rope, 156,823 pounds.....	6,062
Wire rods, 1,914,114 pounds.....	37,119
Anvils, 123,498 pounds.....	7,855
Chains, 16,840 pounds.....	884
Cutlery.....	7,584
Files.....	1,665
Firearms.....	1,956
Pig tin, 1,883,337 pounds.....	378,362
Total.....	\$1,832,540

Imports of American iron for 1893 may be given as follows:

	Tons.
Pig, by sea.....	6,751
Oregon, by sea.....	5
Bar, &c., by rail and sea.....	4,000
Total.....	10,756
1892.....	13,582
1891.....	7,989
1890.....	7,313
1889.....	14,057

This, of course, does not include iron in any of its manufactures, such as castings, &c.

Supplies of pig iron from all sources in 1893 were as follows:

	Tons.
Foreign.....	3,538
American, Eastern.....	6,751
Oregon.....	5
Total.....	10,294

Stock January 1, 1893.....	7,000
Total.....	17,294
Stock January 1, 1894.....	7,000
Consumption and export, 1893.....	10,294
Consumption and export, 1892.....	12,081

The imports of steel from foreign countries during the past year were only 7,607,271 pounds, a very great falling off from other years, showing that our steel manufacture has declined a great deal. The demand for steel has been, like that for iron, light—that is, comparatively so, the business sympathizing with every other. Here were no especial changes in price to note. The year closed with comparatively light stocks on hand.

There has been a very fair demand for wire and wire rope during the year not only from home sources, but also from the East, as several cables manufactured in this city have been shipped east and several others have been ordered.

### Reduced Rates on Iron.

Notice has been issued by Chairman Blanchard of Chicago that, taking effect February 5, to expire September 30, certain articles of iron and steel manufacture, shipped in carloads, will be taken at the current sixth-class rates, and in less than carloads at the current fifth-class rates. When the articles are not shipped under the terms of the uniform bill of lading one class higher will be charged, and if the articles require to be released and shippers refuse to execute a release two classes higher will be charged. The more important articles are: Boiler flues or plates; bolts, bridge or barge, 12 inches and over in length; bolts in boxes or kegs; brake beams, brake shoes, bridge, car couplers, car springs, car wheels; castings, N. O. S., each weighing 15 pounds or over; castings, N. O. S., securely wired together in bundles, weighing 15 pounds or over per bundle; castings, N. O. S., in barrels or boxes; cattle guards; chain or chain cable, chain iron, railroad chairs, crow-bars; cultivator teeth, in boxes or casks, L. C. L.; cultivator teeth, C. L.; draw bars, draw heads; fence, picket, K. D., in bundles; fence, wrought iron, in panels; fire plugs; frogs, railroad; furnace castings, girders; ingots, L. C. L.; ingots, C. L., per gross ton, 2240 pounds, same as 2000 pounds; locomotive wheels, tires and springs; nails, nuts, pig iron; poles, pole irons and mast arms, electric light or railway; spiegeleisen, L. C. L.; spiegeleisen, C. L., per gross ton, 2240 pounds, same as 2000 pounds; spikes in kegs, actual weight; spikes, clover huller and thrashing machine, in boxes or kegs; stoves; switches, railroad; turn tables, C. L.; wire in boxes, barrels, or casks; wire, barb; wire, fence; wire rope on reels or in coils; wire, telegraph.

Joseph Richards of Philadelphia has a plan for soldering aluminum which involves the use of phosphorized alloys for the purpose, the function of the phosphorus being to remove the thin film of oxide always present on the surface of aluminum and which renders soldering so very difficult. Good practical results have been attained.

The American Copper & Brass Works of Cincinnati, Ohio, have just secured the contract for the copper work in the large anti-trust distillery about to be erected in Terre Haute, Ind. Ran-

dolph & Clowes of Waterbury, Conn., will furnish all the sheet copper and seamless drawn tubes used in the work. It is claimed that this is the largest single contract for this class of work that has ever been placed.

### The Ashley Nipple Holder.

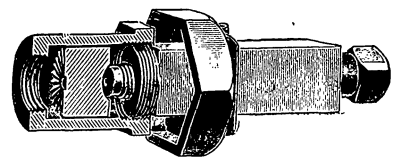
In order to adapt this holder for machine use the Walworth Mfg. Company of 16 Oliver street, Boston, shrink upon the square shank, shown in the small engraving, a piece of extra pipe of the length of the machine cylinder, extending the follower bolt to correspond. This permits the sleeve and hexagon collar to come without the face of the gripping chuck of the machine, while the head of the follower extends beyond the end of the cylinder. By this arrangement the operator is able to set up and release the nipple or change the sleeves without disturbing the shank of the holder. In cases where the speed is moderate these changes can be made without stopping the machine.

The different sleeves (or heads) corresponding to the size of pipe, being interchangeable, are easily screwed on to the shank by hand, when the hexagon collar, sliding along the square shank, fits over the hexagon end of the sleeve, securely holding it from turning either way, and taking the strain off the sleeve and shank thread. The piece of pipe to be threaded is screwed into the holder; the teeth on the face of the non-

electric current. The city electrician says: "It is my opinion from what I have noticed that the current escapes from the rails of the street railway tracks and goes to the pipes, which, embedded in moist earth, offer it a better path back to the power house. It is my belief that it escapes the same all over the city, and the reason that the pipes are so seriously affected near the power houses and scarcely at all in the outlying portions of the city is that the pipes are so much more densely charged with it near the power houses than elsewhere."

The Albany Water Board, of which Elnathan Sweet is chairman, proposes a plan for a new water supply, which will call for about 6000 net tons of 54 and 39 inch steel pipe and 43,600 feet of 36 inch cast iron pipe.

The British Consul at Antwerp, writing to his Government in regard to the Antwerp International Exhibition, says:



Holder Detached.



THE ASHLEY NIPPLE HOLDER.

rotary follower within the sleeve (shown in small cut) are forced in contact with the end of the pipe by turning up the follower bolt, which prevents the pipe or nipple from turning in either direction, thus permitting the cutting of right or left hand threads. The holder being placed in a vise, the die is applied in the usual manner. The round end of the holder will enter the head of the die stock, so that the die may be run on until it comes in contact with the end of the holder, if desired, so that the shortest possible nipple required may be cut.

During the past few weeks a large number of Hungarians and Poles employed in the Connellsville coke region have been discharged. There is a disposition on the part of coke operators to get rid of these men, especially in the coal mines. During the past six months hundreds of these men have left the region on their own accord. It has been demonstrated that during strikes in the region they become desperate and are extremely hard to control.

The city officials of Omaha, Neb., are exercised over the rapid disintegration of cast iron gas and water pipes in certain sections of the city. The pipe is said to have been destroyed in but 12 to 20 months from the time it was laid. As the trouble occurs in the vicinity of the power houses of electric street railways it is ascribed to the escaping

"Few people, I believe, realize the extent and importance of this exhibition. So far as regards the size of the grounds and the dimensions of the main buildings it will be about one-third the size of the Columbian Exhibition. Jackson Park has an area of nearly 600 acres, and the main buildings covered 80 acres. The park in which the Antwerp Exhibition will be held is 200 acres, and the main buildings will inclose 25 acres."

The British *Board of Trade Journal* gives a comparison between the cost of bringing various articles from Liverpool to Manchester by rail prior to the opening of the ship canal and the cost by canal under the maximum tariff. In the case of iron ore the present rate is 6 shillings and 11 pence per ton, while the cost per ton by canal will be only 2 shillings and 10 pence. "The saving to the iron trade," remarks the *Journal*, "may be noted as amounting to a release of that industry from a prohibitive tax."

The litigation which stopped work on the elevation of the New York Central Railroad's tracks on Park avenue, New York, has been disposed of and work on the structure, which was stopped several months ago by an injunction restraining the city from paying its share of the cost, on the ground that the improvement was not a public work, but for the benefit of the New York Central Railroad, will be resumed at once.

## THE WEEK.

The annual report of the Chicago Board of Trade shows that the business of the board in 1893, although less than that of 1892, was greater than in any other year. Receipts of grain and flour in bushels were 247,000,000, only 8,000,000 bushels less than in 1892. The shipments for actual consumption and for export last year were more than 100,000,000 bushels of grain, 4,100,000 barrels of flour, 956,000,000 pounds of pork product and 1,257,000,000 pounds of beef and beef product, aggregating a value of not less than \$250,000,000, making Chicago the greatest provision mart of the world.

The first cotton ship to enter the Manchester ship canal was the "Frisburg," from Galveston, Texas, which arrived on January 15 with 4170 bales.

The Senate Committee on Agriculture have favorably reported on a bill appropriating \$1,000,000 for the extermination of the Russian thistle. This prolific weed has become a serious pest in portions of the country, particularly in the Northwest, where large tracts of land have been overrun by it and rendered useless for agricultural purposes.

The greatest floating refrigerator yet placed in the water is the new steamship "Gothic," built by Harland & Wolff of Belfast, Ireland, for Ismay, Imrie & Co. of England. She is intended for the New Zealand meat trade and is fitted for carrying 75,000 to 80,000 carcasses of frozen mutton, as well as a large cargo of dairy produce. The refrigerating arrangements of the vessel are said to be the most perfect yet adopted.

A twin screw electric boat 150 feet long, 25 feet wide and 5 feet draft has been built for use on Seneca Lake for commercial purposes.

There is said to be a growing disposition among Northern cotton manufacturers toward removing to the South, so as to place themselves in closer proximity to the source of supply of raw material. It is calculated that an economy of nearly 16 per cent. would thus be secured. A number of Southern cotton mills are preparing to weave and finish goods in order to get them directly to the merchant who distributes them, thus saving the unnecessary expense incurred in handling the goods between the Southern spinners, the Northern weaver, the jobber, and the distributor.

The number of failures announced in the United Kingdom during the year 1893 was 10,658, of which 1045 were in the financial, wholesale, and manufacturing branches of trade, and 9031 in retail trade, professional pursuits, building, among the working classes, &c.

The Belgian Consul at Odessa, Russia, has recently forwarded to his Government a report of the petroleum trade of the Caucasus, from which it appears that 24,921,840 pounds (pounds = 36 pounds avoirdupois) of petroleum were shipped from Batoum during the first half of 1893, in addition to several million pounds of naphtha, lubricating grease and naphtha residue. Of the petroleum the principal recipient countries were as follows: England, 4,325,000 pounds; Austria, 3,820,000; Turkey, 3,250,000; Belgium, 1,130,000; Italy, 691,500; Germany, 680,000; British In-

dia, 5,482,500; China, 1,455,000; Japan, 542,650, and Java, 2,277,500 pounds. The shipments to the extreme east are, says the consul, increasing year by year.

Efforts are being made toward an early reorganization of the Nicaragua Canal Construction Company.

Reports from Grand Rapids, Mich., intimate that the furniture manufacturing industry of that district is quite flourishing in spite of the general depression. All the factories are running on either full or part time and have orders enough to keep them busy until July.

Contracts are reported to have been made for the docking and repairing of the American liners "New York" and "Paris" at the yards of the Newport News Company. The docks at Newport News are the only ones on the coast large enough to accommodate these lengthy vessels.

An electric trolley road between New York and Philadelphia is the latest scheme on the carpet. Quaker City capitalists are said to be behind the enterprise, for which franchises have been secured in New Jersey.

United States Consul F. C. Penfield, at Cairo, Egypt, has notified the State Department that the Egyptian Government has announced an extension of six months for receiving bids for the proposed construction and operation of a system of street railroads in Cairo and its environs.

The rapid Transit problem in Boston is about to be solved by the construction of subways for the electric cars. This plan is found to be the only one by which the obstacles to rapid transit presented by the narrow and tortuous streets of the city can be overcome. A bill has been prepared for presentation to the State Legislature, asking permission to make a tunnel 10,000 feet long, at an estimated expense, including land damages, of \$5,000,000.

French economists are concerned at the discovery that savings banks deposits in that country have shrunk more than 16 per cent. in the past two years.

No sanguinary naval action has as yet taken place in Brazilian waters. The improvised war vessels of the Government and those of the insurgents appear to strictly maintain a respectful distance between each other, and it is possible that no collision may occur after all. This will doubtless be a disappointment to those connoisseurs who have been looking forward to an interesting object lesson in modern naval warfare. Rumors of arbitration are gaining ground.

An important sale of a block of property on lower Broadway, New York, is reputed to have been arranged, the purchasers being certain Chicago capitalists, whose intention, it is said, is to erect there an immense 18 or 20 story office building. The purchase money mentioned is \$2,700,000.

The police of New York have been engaged in compiling an accurate census of the unemployed labor in this city. The results of their investigations, which have not yet been promulgated, will be particularly interesting if the report discriminates between *bona fide* workmen out of employment and the chronic idlers.

A company has been organized and incorporated in Wisconsin for the purpose of building a canal from Lake St.

Clair to Lake Erie, thus avoiding the dangerous places in the present route and shortening the route from West Superior to Buffalo by 100 miles.

A statement issued by the Chief of the Bureau of Statistics, at Washington, shows that 13,126 immigrants arrived in the United States during December, 1893, as compared with 22,719 in the same month of 1892. During the entire year the number of immigrants entered was 488,775. In 1892 it was 543,487.

## PERSONAL.

Abram Garrison, senior member of the firm of the A. Garrison Foundry Company, Pittsburgh, is lying seriously ill at his residence in Allegheny, Pa. Mr. Garrison is one of the oldest iron manufacturers in Pittsburgh, having been engaged in business in that city for more than 50 years.

John Fritz and S. T. Wellman started on Thursday last for a trip to the iron and manganese mines of Cuba.

Jarvis B. Edson of New York has been awarded the John Scott Legacy Medal and Premium by the Franklin Institute for his pressure recording gauge.

The following are the candidates at the forthcoming election of the American Institute of Mining Engineers: For president, John Fritz, Bethlehem, Pa.; for vice presidents, J. F. Holloway, New York City; J. C. Platt, Waterford, N. Y.; E. V. d'Inwilliers, Philadelphia, Pa.; for managers, T. A. Rickard, Denver, Col.; H. O. Hofman, Boston, Mass.; John A. Church, New York City.

Joseph Platt of Fielding & Platt, Gloucester, England, arrived in this country last week. We understand that Mr. Platt expects to remain for two months, during which time he will make his headquarters with his son, John Platt, at Riverton, N. J. He is interested in a suit pending against the Morgan Engineering Company, and is looking up some American patents which are to be introduced into England.

E. Williams, hitherto chemist of the Brown, Bonnell Iron Company, Youngstown, Ohio, has been appointed founder of the Phoenix Furnace.

Frederick Bishop has resigned as superintendent of the Pottsville Iron and Steel Company, Pottsville, Pa.

Compressed gas is being introduced for motive power in river boats on the Seine.

The rate of freight on steel rails from Pittsburgh to Cairo, Carbondale, Centralia and DuQuoin, Ill., has been fixed at \$3 per gross ton; to Kushequa, Pa., it is \$1.76 per ton; to Chicago, \$2.75; Cincinnati, Ohio, \$1.60; Cleveland, \$1.35; Indianapolis, \$2, and New Orleans, La., \$5.30.

The Block-Pollak Iron Company of Chicago, dealers in old railroad material, have purchased all the structure and material pertaining to the Barre Sliding Railway, erected at the World's Fair in the expectation that it would be one of the attractive features of the exposition. A large sum was sunk in the erection of this piece of work, but for some reason it was not put in operation.



## OBITUARY.

LEONARD WHITE.

Leonard White, one of the pioneers in the manufacture of edge tools and founder of the firm of L. & I. J. White of Buffalo, N. Y., died on December 31, in his 84th year. Mr. White was the oldest practical edge-tool man in America. He was born in Tolland, Ct., November 16, 1810, from which place his family moved to New York State in 1819, settling in the town of Elba. At the age of 16 he went to Rochester to learn the trade of an edge-tool maker. For the next ten years he remained in the employ of D. R. Barton, at that time the only prominent edge tool manufacturer in this country, and during his service mastered the business in all its details. In company with his brother, I. J. White, he established, in 1836, an edge-tool factory at Monroe, Mich., where for several years they carried on a flourishing business. Becoming convinced, however, that Buffalo possessed more advantages as a point of distribution, they decided to move their plant, and accordingly, in 1844, they established new works on Ohio and Indiana streets, where from time to time they made such alterations in their building and equipment as were called for by a demand for increased facilities and by changes in their processes. After 21 years these works were destroyed by fire, and being desirous of rebuilding on a larger scale, property on Exchange street was purchased and extensive works were erected, which they occupied until they moved into their present quarters, corner Perry and Columbia streets. Their present plant is equipped with the best appliances known for the rapid and perfect production of their specialties and is so arranged as to provide for future growth.

The implements made by L. & I. J. White may be divided into four general classes, in the development of each of which Leonard White took an active and important part. First and most important among these is their line of coopers' tools, of which, they are perhaps the most extensive makers in America. These include every imaginable implement pertaining to the cooper's trade. The firm likewise turn out a great many carpenters' tools, particularly chisels, draw shaves, plane irons and ship carpenters' tools. A third specialty of the

house is a complete assortment of butchers' tools, embracing all the implements used in packing houses and meat markets. And last, but not least at the present time, the vast increase in the number of planing mills and kindred industries requiring knives, the same including stave, hoop, veneer, paper cutting and leather splitting knives, &c., has enlarged the demand to such proportions that the machine knife department is now one of the most important of the business.

The reputation acquired by the articles made by this company was gained largely in the first instance by the fact that they early introduced the

ferring to obtain young men having natural aptitude for his particular work and then training them in his own establishment. In this way there are now at the works of the company men who have been for between 40 and 50 years continually in their employ. A remarkable result in the treatment of the men by the firm is the fact that there never was a strike or never a gathering together of the men to discuss their position with the company and to demand any additional wages. Further than this, no man was ever discharged because he was incapacitated by reason of old age. He was given employment, when too old to work at

his specialty, in some department where the work would fit his strength and ability, this practically amounting to pensioning.

A. W. COATES.

A. W. Coates, senior member of A. W. Coates & Co., manufacturers of hay rakes, Alliance, Ohio, died in that city on the 22d. ult. Mr. Coates' death was sudden and was due to heart failure. Mr. Coates was born near Marlborough, Ohio, April 24, 1834.

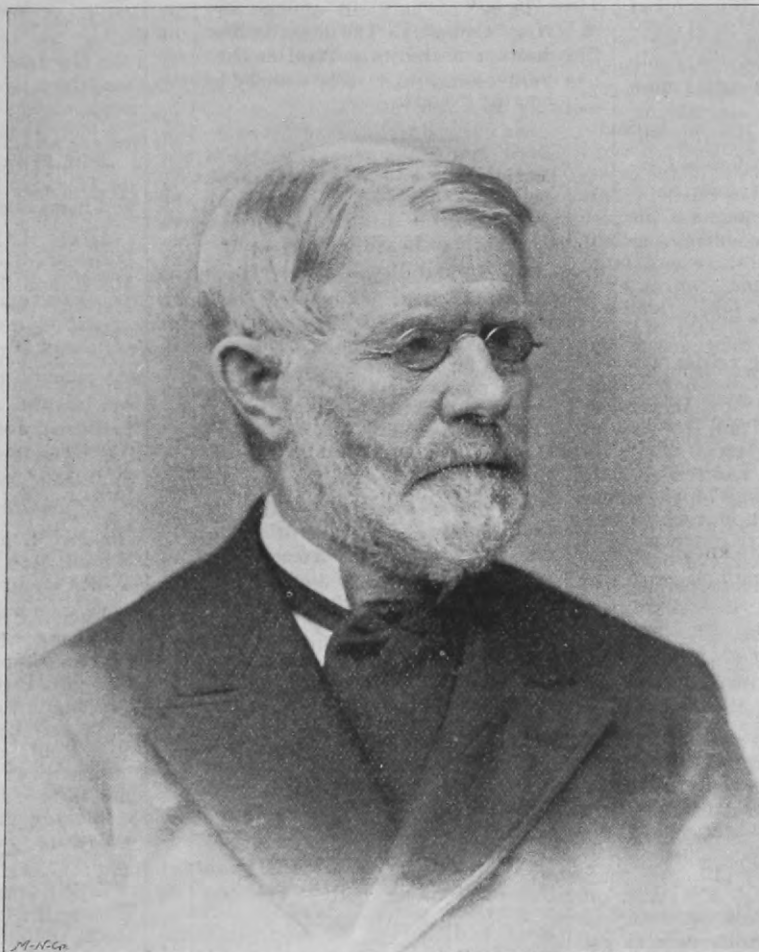
ALFRED THOMAS.

Alfred Thomas, one of the most prominent capitalists of Columbus, Ohio, and president and treasurer of the Ohio Tcol Company of that city, dropped dead in the office of that concern on the morning of February 2. Mr. Thomas was 68 years of age and had long been identified with the manufacturing interests of Columbus, and was also director in the Little Miami Railroad.

SAMUEL N. CLIFFORD.

Through an oversight the death has not been mentioned in these columns of Samuel N. Clifford, who has of recent years represented the Reading Iron Company in Chicago. His death occurred on January 9. Mr. Clifford was very widely known in the tube trade, with which he had been identified for many years.

The Raritan Hollow & Porous Brick Company of 874 Broadway, New York, manufacturers of fire proof building materials, have issued a calendar in which they have endeavored to show in an artistic manner the modern methods of fire proof construction. To the layman it shows, by means of a sectional perspective view, the manner of using hollow brick, while, being drawn in a technical way, it is instructive to the architect as well.



LEONARD WHITE.

system of a guarantee in regard to quality. This they were enabled to do by reason of the care exercised in the selection of material and the employment of the best skill obtainable in the manipulation afterward of this material. Mr. White was of an exceedingly determined character, believing that what had been done could be done again, and also being thoroughly convinced that an extended series of experiments along any particular line would perhaps produce what he sought, but if not it would certainly be so much gained in experience and would perhaps become of great value, indirectly, later on. Therefore, when new demands were made upon him for edged tools not in his line he never hesitated at any cost to institute and carry to the end experiments which were generally successful and yet at the same time possessed a certain degree of risk. It was his policy to educate his men to the business, pre-

# The Iron Age

New York, Thursday, February 8, 1894.

DAVID WILLIAMS, - - PUBLISHER AND PROPRIETOR.  
CHAS. KIRCHHOFF, - - EDITOR.  
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.  
RICHARD R. WILLIAMS, - HARDWARE EDITOR.  
JOHN S. KING, - - BUSINESS MANAGER.

## The Canadian Market.

The rapid decline in prices in this country is bringing us to the point at which there is a chance of doing a larger business in Canada as sellers of iron and steel. We print elsewhere the first letter of a special correspondent who is looking into the question of an enlarged export to Canada. Compared with our own enormous demands the requirements of the Dominion are small, and may serve as a good illustration of the narrowness of the "world's markets," which we hear so much of from the philanthropists who are so eager to take care of our industry in their own peculiar way. Still, during the present period of dearth of orders a study of this relatively fresh field may prove of some small benefit to American makers.

The annual consumption of all kinds of iron and steel is estimated at about 600,000 tons. So far as we know, the statistics of Canadian consumption are extremely meager and inadequate. We know the imports and we know the production of pig iron; but we do not recall ever having seen in print any figures dealing with the production of the rolling mills of the country. Their total capacity is barely 100,000 gross tons per annum, and owing to the peculiar circumstances surrounding the industry a considerable part of the trade which they control cannot be touched. Under the Dominion tariff scrap iron is admitted free, so that the rolling mills depend very largely upon that as a raw material, having drawn lately, in fact, upon this country for some of the supply. For the small amount of steel billets and wire rods which they use the Canadian rolling mills and works have depended chiefly upon Germany. At present prices we ought to get pretty near the European competitors, if it were not probably much better to raid the markets for the products themselves, wire and cut nails, barb and plain wire, bars and shapes.

No steel rails are made in Canada, the entire consumption being covered from Europe. At present prices not even the Western mills have much of a chance at the market west of the head of the lakes, unless they make a special drive at it.

One consideration should be taken into account when investigating the Canadian market. For the material which is imported, contracts are placed in such a way that the goods for the

winter consumption arrive before the close of navigation. The country is therefore probably now stocked for a few months more. The recent capture of an order for 60 miles of wrought iron pipe shows what can be done, and there is little doubt but what prices can be made quite attractive to Canadian buyers. So far as character and quality of product are concerned, Americans will have very little prejudice to overcome. The requirements of the Canadians are so much like our own, so many of their works turn out goods made with machinery of American design and invention, that very little educational work need be done. Then we have the further advantage in trying to enter that field of finding the question of credits and settlements less troublesome than it is usually in working up a new market.

## Instability and Big Guns.

It is interesting to note that the Naval Stability Board, appointed to ascertain the stability of the recently completed cruisers, "Machias" and "Castine," recommend the lengthening of the vessels in preference to reducing the weight of their armaments. It is proposed to cut each boat in two and add 14 feet to the hull, in order to provide adequate stability for the guns and masts, the added space to be used for carrying more coal. These vessels are small and their batteries are comparatively light. They have a length on load water line of 190 feet, an extreme width of 32 feet, mean draft of 12 feet and a displacement of 1067 tons. The main battery consists of eight 4-inch R. F., four 6-pounder R. F., two 1-pounder R. F. guns and two Gatlings.

The finding of this board, the turning over and rapid sinking of the British battleship "Victoria" and the more recent performance of the British ship "Resolution," about which fears were entertained that she would capsize because of top heaviness—all appear to emphasize the statements made by eminent naval architects that the days of great guns and their massive housings are fast nearing the end. The fact that there is a limit to the load that can be safely placed on the deck of a ship is being recognized. It is known that the safe load bears a fixed relation to the displacement and that to increase this ratio is to invite danger and possible disaster. The first and most essential requisite of a warship is seaworthiness, and when this is interfered with in any way its efficiency as a fighting machine is correspondingly lessened.

There are other features of this question which point to the abandonment of guns of more than 12 or 13 inches bore. The experience gained in European navies with 100 ton guns has proved them to be costly, inefficient and unreliable—in other words, their greater power is more than offset by their disadvantages. Further than this, the great muzzle velocity obtained

from smaller calibers by increased length and the use of smokeless powder, and the perfection reached in the manufacture of projectiles, have done away with the demand for big guns. If the present 12 or 13 inch gun will send a shot through the present armor there is no necessity for guns of larger caliber, and there will be none until in the race for supremacy the armor takes the lead. A by no means insignificant feature of the big gun is the hurtful effect it has on the ship carrying it. We refer, of course, to the results produced by concussion at each discharge. This effect is proportionately reduced in the smaller guns, and is not deemed a dangerous element.

Somewhat rash predictions are being made concerning the possibility of exporting Southern pig iron. This is done on the strength of reported low cost production in the Birmingham district. Every one familiar with the Southern iron trade knows that there has been a good deal of progress in the direction of improved furnace practice and of better preparation of the coal for coking. Incidentally we may remark that some of the big furnace records reported from the South, as well as from other sections, are due to the fact that at some plants the idleness of one or more stacks has made it possible to put the whole blowing power on the furnace or furnaces running. Very fast driving has thus been possible, but must not be regarded as normal practice. But to return to the low cost of production, and granting everything that is claimed, it does look as though distant newspaper writers knew better than the men themselves who manage the plants. The Birmingham iron masters have been doing some very active missionary work lately against the Wilson bill. If they were as sanguine over the chances of doing a large export trade in pig iron as the eager prophets referred to they would show more indifference to possible foreign invasions of the home markets. The fact is that Southern iron makers know perfectly well that, low as their cost at furnace may be, the telling figure is what they can lay down their product on the dock at shipping port. That they cannot for the present lay down their metal in neutral markets. Nor is it true, as it has been claimed, that pig iron is being produced in Alabama cheaper than at any other point in the United States. That distinction belongs to the Luxemburg district on the Continent, and we believe to the works at Peine, near the Hartz Mountains.

It is stated that the proposed metal wheel works at Moline, Ill., which were to be established under the auspices of local implement manufacturers, will not be built. On careful investigation it was found that such wheels could be purchased on better terms from regular makers than they could be manufactured for on a necessarily limited scale.



## Washington News.

(From our Special Correspondent.)

WASHINGTON, D. C., February 6, 1894.

As indicated in *The Iron Age* at the beginning of the controversy, the Wilson tariff bill passed the House without amendments, except as recommended by the majority of the Committee on Ways and Means. The cowardice of the members of the majority whom Representative Haines of New York had on his list in deserting at the last moment was not a surprise when the efficacy of the party lash and Administration mandates and patronage are considered.

At one time Mr. Haines had 35 of his colleagues on his list, with a total of 56 who were dissatisfied with the bill and income tax combined. When the internal revenue amendment was put to a vote it was carried by the overwhelming majority of 180 yeas to 50 nays. The resolution of recommitment by Mr. Covert, a majority member from New York, fared better, receiving 103 yeas to 177 nays, but enough to overwhelmingly defeat it. This was the proposition on which it was expected there would be a close vote. Then the bill went through—yeas, 204; nays, 140, the minority voting solidly against it. The majority opposition collapsed entirely, leaving but 17 on the negative side.

The bill is now before the Senate Committee on Finance. Senator Voorhees, chairman, in conversation with the correspondent of *The Iron Age*, said: "It is the purpose of the managers of the bill in the committee to consider it as promptly as possible and report it back to the Senate."

The Senator was non committal on the subject of amendments in committee. He said that the circulars of inquiry which had been put out would take the place of hearings. The newspapers, which have been generally misinformed from Washington until the past few days, in regard to hearings, have led the manufacturers into the belief that they were to be given at least some sort of a show. This was the supposed intention about six weeks ago. *The Iron Age* announced the abandonment of this plan about a month ago, and the substitution of the circular scheme, and printed in full the schedules of questions which the committee propounded, and many of which were not only absurd, but others were incapable of being answered by any of the sources of information available. The talk of members of the sub-committee in charge of the bill leaves the impression that they will recommend no material amendments to the bill as it came from the House.

An impression has been thrown out that the dissatisfied members of the majority and the minority would combine to modify the bill. This is a mistake. The minority will not vote with these people to restore the duties to satisfy certain localities interested, for instance, in coal, iron ore, wool, lumber, salt, and allow the manufacturers to be ruined by destructively low rates of duty.

Men like Aldrich, Allison and others speaking for the minority are willing to unite with any members of the majority on a fair revision of the whole bill or to kill it, but upon no other terms. They propose to let the majority fight the issue out on their own lines.

The dissatisfied Senators in the majority foot up about ten, two from Louisiana, on sugar; two from West Virginia, on coal; two from Alabama, on iron ore; two from Maryland and one from Virginia, on both iron ore and coal. The two New York Senators would like amendments on certain manufactures. As the minority will vote solidly against all such discriminating amendatory legislation the adoption of such piecemeal methods will be impracticable. Senator Voorhees thinks that the bill will be ready to report back by the end of the present month. The consideration of the bill in the Senate committee will be as great a farce as its manufacture was in the Ways and Means.

The amendment proposed by Senator Quay providing for free coinage, monthly purchase of gold, issue of 40-year gold certificates and repeal of the State bank tax, will introduce some complications in the consideration of the tariff bill when it reaches the Senate which may prolong discussion or lead to its defeat. The amendment is more of a parliamentary movement than an effort on the part of the Senator to secure legislation of the character suggested.

## MANUFACTURING.

### Iron and Steel.

For some time past it has been the policy of the Pennsylvania Nut & Bolt Company, Lebanon, Pa., to run full as long as sufficient orders were on hand, and when these were worked up, to stop long enough to allow additional orders to accumulate. This concern have been able recently to operate their plant double turn about half time.

Summers Brothers & Co., Struthers, Ohio, manufacturers of box annealed sheet iron and sheet steel, are putting down a 22 x 48 inch cold rolling mill and expect to have the same in operation about March 15 next. The sheet mills of this concern are working right along, but their puddling department is not averaging more than one week in a month.

The Sharon Iron Company, Limited, Sharon, Pa., are putting in a galvanizing plant and expect to have it in operation about March 1, next.

At a recent meeting of the stockholders of the Wheeling Steel & Iron Company, Wheeling, W. Va., some changes were made in the Board of Directors, and Geo. Wise, treasurer, resigned his position. Mr. Wise was secretary of the Benwood Iron Works when that concern was absorbed by the Wheeling Steel & Iron Company, and was also appointed treasurer of that concern. In order to meet the competition made by the reduction in salaries and wages by competitors the directors of the Wheeling Steel & Iron Company decided to reduce the salaries of their office employees and Mr. Wise could not see his way clear to accept the reduced salary offered him. The Belmont plant of the above concern has recently been put in operation, and their Belmont Furnace, which has been idle for some months, will also be started up at an early date.

On Friday, the 16th inst., the Linden Steel Company, Pittsburgh, Pa., will pay 10 per cent. of their indebtedness, which is six months in advance of the time granted the concern under the terms of the extension. By making this payment at this time a considerable saving of interest charges will be effected.

The Hubbard Co-operative Iron Company, Hubbard, Ohio, have been operating the plant of the Hubbard Iron Company at that place for about a month past. As yet the puddling department is the only one in operation, and this is running on an order for 1000 tons of muck bar for shipment to Pittsburgh.

Buffalo, N. Y., newspapers state that the industries of that city are soon to be increased by the establishment of a steel rail plant. The corporation will be known as

the Reese Iron & Steel Company, Abraham Reese of Pittsburgh, the principal organizer of the company, being general manager. The enterprise is too young to go into details of plant and operation, but it is learned that the company intend to manufacture rails of light section for street car and mining purposes, and will reroll old rails by a process said to be Mr. Reese's own invention. The plant will cover about 8 acres and have a capacity of 100 tons a day, double turn. The entire amount of the capital stock has been subscribed for, the promoters being New York, Buffalo and Pittsburgh capitalists. Buffalo was chosen, it is said, on account of her position as a shipping and receiving point.

The Mahoning Valley Iron Company, Youngstown, Ohio, have made a reduction of 10 per cent. in wages of the nailers, and their nail factory, containing 55 nail machines, resumed operations last week to nearly full capacity.

Puddlers of the National Rolling Mills, at McKeesport, Pa., have accepted a proposition based on \$4 per ton for boiling, and during this week a number of puddling furnaces in the above plant will be put in operation.

Notices have been issued for the annual meeting of the stockholders of the Oliver Iron & Steel Company of Pittsburgh to be held in that city on Tuesday, the 13th inst.

The Latrobe Steel Works, Latrobe, Pa., have made a second reduction in wages of their employees.

During 1893 there were 1240 accidents to workmen employed in the Homestead Steel Works, Homestead, Pa., an average of 103 per month. Death was instantaneous in five cases, and followed almost immediately in four others. One man had a leg amputated, and 26 lost fingers or hands. The recent introduction of improved appliances in this plant is claimed to have lessened very materially the chances for accidents.

The Vesuvius Iron Company have been organized at Ironton, Ohio, and will operate Vesuvius Furnace, at that place, formerly run under the management of the Ironton Coal & Iron Company. This furnace is located at Pedro, Lawrence County, and has been idle for some months. The officers of the Vesuvius Iron Company are W. C. Amos, president, and A. J. Dutiel, secretary and treasurer.

At the annual meeting of the stockholders of the Foster Stove Company, Ironton, Ohio, held there last week, Charles Alexander was made a director and also foreman of the concern, to succeed his father, lately deceased. This is the only change made in the directory of last year. An annual dividend of 4 per cent. was declared.

There is some prospect that the plant of the Keystone Rolling Mill Company, at Soho, Pittsburgh, which has been idle for some months, will be put in operation before a great while.

No. 4 furnace of the Pennsylvania Steel Company, Steelton, Pa., which has been idle for some time, will be put in operation during this week.

Operations on the building of the rolling mill at Columbia Heights, near Minneapolis, Minn., are to be resumed by T. Lowry.

The employees at the Albany Iron Works, Troy, N. Y., who were not included in the reduction of wages made about a week since, were notified that their wages had been cut 10 per cent., and accepted the reduction.

The Cohoes, N. Y., Tube Works closed Saturday night, February 3, on account of a lack of orders. The plant has been in operation steadily since last August, with the exception of a week during the holidays for inventory and repairs. The manager of the firm says that the mill is stocked full of pipe which cannot at present be sold. The closing of the tube works will probably necessitate a shut down at the Cohoes Rolling Mill, which makes the greater part of the iron used at the tube works. No notice of such has yet been posted at the rolling mill.

Work was resumed at the Utica, N. Y., Pipe Foundry, Monday, February 4, after a shut down of two months. The full force of men started on full time. The men have accepted a necessary reduction of wages of about 15 per cent.

Hinkle Charcoal Furnace, operated by the Ashland Iron & Steel Company of Minneapolis, Minn., was blown out on the 25th ult., when it completed a remarkable run. The furnace was blown in December

27, 1890, and has been in almost continuous operation ever since, only stopping 91 days out of a total of 1125, the actual running time being 1034 days. During that time 112,118 gross tons were turned out, an average of 108 2-5 tons per day. During the first half of the run the charcoal supply was not sufficient to keep the furnace running at an economical point, and it was banked at intervals to allow fuel to accumulate. The charcoal plant later on was increased by the addition of several new sets of kilns, so that the furnace has been making latterly 120 tons of iron daily. The company believe that while this is perhaps not the longest run on a single hearth made by a charcoal furnace, it is the largest amount of iron ever so made. They have a full assortment of iron on hand, and will take advantage of the present depression to make needed repairs and be ready to resume operations whenever the business situation warrants it.

The Campbell Iron Company have blown in their Mount Vernon Furnace, at Campbell Post Office, in Lawrence County, Ohio. J. W. Campbell, manager, sends us the following figures relating to wages and cost of supplies: For cutting cord wood, 25 cents; ore, delivered, \$1.10 per ton; the house rent is free. The following store prices indicate the cost of supplies: Fancy flour, \$4; extra flour, \$3; coffee, 25 cents; bacon, 12½ cents. In 1893 the company had 800 acres in corn and cut 150 tons of hay, while 500 acres are now in wheat. This year the company expect to pay 3 to 3½ cents for charcoal on bank.

Upon motion of creditors of the Lone Star Iron Company of Jefferson, Texas, all the property of that company has been placed in the hands of a receiver. A blast furnace was erected in 1890 and blown in during March of the following year. It has been idle since April, 1893. The property will be sold May 1.

No. 2 Shelby Furnace of the Shelby Iron Company, at Shelby, Ala., blew in February 1, temporarily, for the purpose of using up wood that was in danger of decay.

Copake Furnace, in Columbia County, N. Y., blew in again January 27 after being out of blast 18 days.

Mattie Furnace of the Girard Iron Company, at Girard, Ohio, was banked January 23.

The Midland Blast Furnace Company of St. Louis, who operate a charcoal furnace at Midland, Crawford County, Mo., announce that they are going out of the iron business. The furnace was shut down January 22.

The employees of the Low Moor Furnace, at Low Moor, Va., have accepted a reduction in wages in preference to having the furnace blow out.

The report that the Johnson Company of Johnstown, Pa., are planning to build a steel rail plant, and that a location has not yet been decided upon, has been the means of inducing a great many towns, large and small, to enter the race.

Lebanon Furnace, at Lebanon, and Sheridan Furnace, at Sheridan, Pa., have started up, and Temple Furnace, at Temple, Pa., will resume within a few days.

At a recent meeting of the stockholders of the Niles Tool Works Company of Hamilton, Ohio, the following directors were elected: Matthew Addy, Wm. P. Anderson, Thos. T. Gaff, Alexander Gordon, W. E. Hall, R. C. McKinney, James D. Parker, George T. Reiss and Frank J. Jones. The annual report showed net earnings for the year of \$220,000, and a surplus fund of \$150,000. The average net profit for the three years previous was \$250,000, but in view of the financial depression of the past six months the showing is considered to be an excellent one.

The York Rolling Mill, at York, Pa., which has been closed all winter, has resumed in all departments.

Operations have been resumed in three butt mills at the Middletown Tube Works, Middletown, Pa.

The Sheridan Iron Company, with a capital stock of \$100,000, have been incorporated at Burlington, N. J., and will succeed William M. Kaufman & Co. of Sheridan, Pa. Gen. E. Burd Grubb, Wm. M. Kaufman and T. M. Kaufman are among the incorporators. The corporation will carry on the mining of iron ore and iron manufacturing at Burlington.

Operations have been resumed in several departments of the Pottsville Iron & Steel Works, at Pottsville, Pa.

The plant of the Beaver Falls Steel Works, at Beaver Falls, Pa., manufacturers of cast steel, which has been on single turn for some months, has been put on double turn in all departments.

The first of three porter bars, claimed to be the largest appliance of that character ever turned out in the United States under a steam hammer, was drawn from the furnace at the works of the Duquesne Forge Company, Rankin Station, Pa., last week. These bars are intended to be used in connection with the large hydraulic press recently installed in the armor plate department of the Homestead Steel Works, Homestead, Pa. The ingot of the first bar weighed 35 tons, and this was worked under a 10-ton hammer after having been reheated three times. It will take at least one week to complete it. When finished this bar will be 45 feet long and 22 inches square, and as soon as it is finished work will be commenced on another of the same size. The third will have a length of 35 feet and will be 14 inches square.

In an item printed in these columns last week relating to the Ohio Steel Company, Youngstown, Ohio, it was stated that the capacity of the plant in rails would be 2000 tons daily. We are advised that this is an error, the correct amount being from 800 to 1200 tons per day.

Last week the Monongahela Iron & Steel Company, with works at Hays Station, near Pittsburgh, manufacturers of muck bar exclusively, notified the puddlers in their employ that they would hereafter be paid according to a classification of the iron. The men who work common pig iron were offered \$4 per ton, the next grade of iron, better in quality, but producing less weight and requiring more skill in working, to be paid at the rate of \$5 per ton, and the highest grade of hard iron to be paid for at the rate of \$6 per ton. The men refused to accept the proposition of the firm and ceased work. At this writing no settlement of the trouble has been reached. In regard to the statement that the Monongahela Iron & Steel Company have been working right along under the Amalgamated Association scale, we are advised that this is untrue. This concern are working under a patented process for the manufacture of muck bars which is used exclusively by their firm, and all matters relating to wages have been settled with their men individually for more than a year past.

The south works of the Lackawanna Steel & Iron Company, at Scranton, broke their best record on Monday, February 5, so far as the Bessemer department is concerned. In 12 hours 66 heats were made, producing 601 tons of ingots.

#### Machinery.

The Hydraulic Machine Company, Pittsburgh, Pa., have recently added to their equipment a 10-ton Morgan electric overhead traveling crane of 52 feet span. This crane is to be used to supplement a 20-ton electric crane.

During this month the Helping Hand Engine Company of New Brighton, Pa., will make application for a change of their corporate name to that of the Pierce-Crouch Engine Company. This concern will manufacture gas engines as soon as buildings are erected and machinery placed, and until this is done will use their present quarters. Foundation has been made for an addition 66 x 110 feet to the present building, which will be completed as soon as the weather will permit.

Deitz, Schumacher & Co., Cincinnati, Ohio, have received an order for 27, 22 and 24 inch engine lathes from a large Eastern firm. They report a marked improvement in business. They say their new 24-inch engine lathe has met with great success, and that they are placing them now where formerly they put a 22-inch lathe.

A new company has been formed in New Jersey, under the title of the General Mfg. Company, with a capital of \$2,500,000. The offices of the company are at 911 Havemeyer Building, Church and Cortlandt streets, New York. The officers are: Abner W. Pollard, president; Robust S. O'Loughlin, vice-president; Louis A. Pollard, treasurer; Ed. G. Kidder, secretary; J. B. Cleaver, business manager. The manufacture of graphite bearings, wheels and axles, pulleys and hangers, &c., will be one department. Foundry, machine shop and boiler shop work will be another department, in which particular attention will be given to the manufacture of water works plant and hydraulic engineering generally. The full high pressure system,

as introduced into the country by Ernest W. Naylor, will be made a specialty, Mr. Naylor undertaking the superintendence of this department. Other manufactures will be added as may be deemed advisable. Works will be built at Bound Brook, N. J., as speedily as possible.

The Woolly Foundry & Machine Works of Anderson, Ind., have secured the contract for rebuilding the machinery of the Irondale Rolling Mill Company.

G. H. Blake & Co., 272 Franklin street, Boston, Mass., general agents for the Boiler Capsule & Gasket Company, are putting on the market Sanders' metallic gasket and packing, which is described as made of ribbons of soft, flexible metal, especially prepared for the purpose, having grooves upon both surfaces, which are filled with asbestos cord which projects slightly above the face of the metal, making a tight joint.

The Salt Lake Co operative Iron Works have filed articles of incorporation at Salt Lake City, Utah. The incorporators are A. B. Naismith, F. A. Colclough, William White, H. H. Peterson, John Robinson, Edward King, A. G. Loudon, John R. Oswald, Olaf Neilson and John H. White. A. B. Naismith is president and A. G. Loudon vice-president. The capital stock is fixed at \$10,000. The company will carry on a general foundry, machine and manufacturing business.

Hoyt & Wynkoop's foundry plant, on Spring avenue, Troy, N. Y., has resumed operations with a full force of molders.

The W. P. Davis Machine Company of Rochester, N. Y., have filed articles of incorporation in the County Clerk's office. The concern are organized for the purpose of manufacturing tools and machinery and will locate in Rochester. The capital stock is \$25,000 and the incorporators are W. P. Davis, C. F. Davis and J. W. Crystal.

The stockholders of the Lansing Iron & Engine Works, at Lansing, Mich., have re-elected O. F. Barnes president and C. P. Ten Eyck secretary and treasurer. The company report bright prospects for a successful year's business.

Judge Hosmer of Detroit has appointed A. C. Stellwagen receiver of the East Saginaw Iron Company of East Saginaw, Mich. The corporation were organized some years ago, but have never had any very active existence.

At Richmond, Va., a charter has been granted to the Talbott & Sons Company, organized for the purpose of manufacturing, repairing, buying and selling of machinery in all its branches. The capital stock is not to be less than \$250,000, nor more than \$500,000. The officers and directors are: Allan Talbott, Richmond, Va., president; Charles H. Talbott, Richmond, Va., secretary and treasurer; Edward J. Willis, Richmond, Va., general superintendent. Directors: Allan Talbott, Charles H. Talbott, Allan Talbott, Jr., Wm. H. Talbott, Alex. W. Archer and Charles T. Williams.

Chas. Fawcett's foundry, recently destroyed by fire, at Sackville, N. S., will be rebuilt at once on a more extensive scale. There will be two buildings, the molding shop and fitting shop, 192 feet long by 55 and 45 feet wide respectively. The former will be one story and the latter two stories in height. The two buildings will run parallel 40 feet apart, and will be connected by a structure 45 feet wide.

The St. Albans Foundry Company of St. Albans, Vt., are making extensive repairs and additions to their works. An increasing business has made it necessary to provide for greater capacity.

The foundry of Carlson & Anderson, at Austin, Minn., has been damaged \$3000 by fire. The patterns were saved.

The Ellwood Irvins Tube Company have begun operations at their new plant near Philadelphia. The company manufacture seamless tubing, and the new works will be run in connection with their old plant at Tenth and Spring Garden streets, Philadelphia. The main building measures 75 x 200 feet, and a number of smaller structures serve as engine room, storeroom, &c. It is expected that the present force of 125 men will be doubled within a month.

G. W. Tift, Sons & Co. of Buffalo, N. Y., expect to close their boiler and iron works about February 15. The works have been running lately with one half the usual force, or about 100 hands.

That part of the machine shop of F. S. Lovell of Fitchburg, Mass., which was destroyed by fire recently, will be rebuilt at once.

The boiler shops of Bovaird, Seyfang & Co. of Bradford, Pa., have started up after an idleness of several months.

It is stated that the Lamokin Car Mfg. Company, now located near Philadelphia, are seeking a new location to rebuild on a larger scale.

The 300 employees of the Delaware Iron Works, at Camden, N. J., have returned to work on full time.

#### Hardware.

A new company is to be formed at Athol, Mass., by L. S. Starrett, I. H. Paige and others to carry on the business of L. S. Starrett, manufacturer of fine mechanical tools.

Superintendent Paul of the Atlas Tack Corporation, Fairhaven, Mass., has just completed a machine of his own invention for the manufacture of a new style and economical clamp for fastening covers on tubs, barrels and boxes. The machine can turn out 150 clamps per minute.

Twenty new tack machines will be added to the Fairhaven, Mass., plant of the Atlas Tack Corporation.

The American Axe & Tool Company have notified their employees at East Douglass, Mass., of a cut down in wages of from 10 to 40 per cent.

A fire broke out in the basement of the American Pin & Fish Hook Company's factory, at New Haven, Conn., on the 25th ult., owing to an explosion of benzine. The fire was extinguished before it did much damage, the loss being estimated at about \$1500.

The annual meeting of the Crescent File & Tool Company, Wilkesbarre, Pa., was recently held, at which the following officers were elected for the ensuing year: G. A. Clark, president; M. L. Driesbach, vice-president, and Fred. Theis, secretary and treasurer.

At the annual meeting of the J. Stevens Arms & Tool Company, Chicopee, Mass., held on the 24th ult., Joshua Stevens was elected president and James E. Taylor secretary and treasurer. The directors are: Joshua Stevens, James E. Taylor and George S. Taylor.

Wallace & Sons, Ansonia, Conn., now in the hands of receivers, have made a proposition to the creditors of the concern to pay them 60 per cent. of the fair value of their claims, or they will place the whole business in the hands of three trustees to be run for the benefit of the creditors.

The works of the Lakeside Nail Company, Hammond, Ind., have resumed operations, giving employment to 500 hands.

The mills of the Tucker & Carter Cordage Company, Brooklyn, N. Y., were opened for work on the 1st inst., after having been closed down for five months. About 100 hands were put to work. The remaining 400 of the regular force will be taken on, it is expected, in a few days.

Application has been made in the Supreme Court for a dissolution of the Hopkins & Dickinson Mfg. Company, formerly of 83 Reade street, New York, and 260-268 Gold street, Brooklyn. The only creditors are Thomas H. O'Connor of this city, who holds 37 notes, aggregating \$92,750, and Erwin J. Crane of San Francisco, who holds 24 notes, aggregating \$54,505. The assets consist of ten patents: cash, \$917; manufactured stock, \$2500; materials and tools, \$65; furniture, \$65. The capital stock of the company was \$100,000, held by B. J. Smith, T. C. Smith, Thomas H. O'Connor and Thomas D. O'Connor. The company were incorporated February 27, 1873. The factory was closed down in July, 1892, and the company have since been closing up their affairs.

Francis J. Hamilton, as assignee of the Vincent Cycle Mfg. Company, Buffalo, N. Y., is disposing of the remainder of the company's stock of bicycles. The wheels are referred to as strictly high grade.

Ruth, Patterson & Ruth is the style of a firm recently organized at Alliance, Ohio. They are manufacturing the Columbian snip and crimper, of which an illustrated description was given in our last issue.

Fenton Mfg. Company, Fenton, Mich., advise us that the prospects for business during the year are much brighter than they were a few weeks ago. Their contracts with carriage manufacturers are nearly all completed and the company expect to turn out over half a million sockets during the season. The whip sockets which the company make were awarded a prize at the World's Fair.

Under recent date the Union Steel Screw Company of Cleveland, Ohio, made the following announcement: "We expect to start a small portion of our machinery only on February 1, so as to work up some special orders which have accumulated during the five or six weeks our factory has been shut down, but we should not be warranted in running our entire factory under present business conditions. Usually at this season of the year we run on full time, but our ability to do this again in the future depends upon the action of Congress with regard to the Wilson tariff bill. If the provisions of that bill which relate to our industry become a law, we have two courses of action before us—either to find another country in which to operate our plant, or to close it entirely so far as its present products are concerned."

Elwood W. McGuire of the Dille & McGuire Mfg. Company, Richmond, Ind., has taken action in the United States Court against the F. S. Anderson Company to enjoin them from infringing on a patent ratchet mechanism owned by him.

Champion Iron Company, Kenton, Ohio, advise us that the outlook in their line of business is better than it was a year ago and they look for a larger volume of business this year, especially in the fence and jail line. Their structural iron department business they think will at least equal that of last year. They state that they ran full time during 1893 and have since the first of 1894, excepting two weeks when they shut down for invoicing. The firm have undergone some changes in management, commencing January 1. G. J. Carter has purchased the interest of James Young and now has charge of the works, holding over three-fourths of the stock of the company. The works have also a new superintendent, and new foremen have been put in charge of some of the departments. These changes they hope will facilitate a more satisfactory conduct of the business. The company are also adding new machinery and making other improvements in their works which they believe will also be advantageous to them.

An injunction has been granted by the United States Court forbidding the manufacture, use and sale of box strapping similar to that put on the market by the Cary Mfg. Company, 5 to 9 Elm street, New York, who are now engaged in suing the manufacturers on four different patents.

#### Miscellaneous.

The coke works of the Calumet Coal & Coke Company in the Connellsville region were put in operation last week after an idleness of several months. The plant embraces 225 ovens and about 300 men were given employment.

The Lebanon Mfg. Company, car builders, of Lecanon, Pa., have closed a contract for 100 cars to be furnished to the Delaware, Susquehanna & Schuylkill Railroad, and the shops of this concern, which have been idle for some time, have again resumed operations, giving employment to about 200 men.

Pittsburgh stockholders of the Westinghouse Brake Company, Limited, London, England, last week received checks for their regular 10 per cent. semi-annual dividends.

The Standard Gauge Steel Company, Beaver Falls, Pa., manufacturers of drawn shafting, machine racks, elevator slides, piston and pump rods, angle bars and special shapes are one of 11 bidders on the contract for furnishing 69,693 iron or steel shelves for the new Congressional Library building at Washington, D. C. The number of bidders for this contract affords an excellent idea of the limited number of manufacturers in this country that are able to furnish such special shapes as are necessary to form these shelves. The patent adjustable die and die lock owned by the Standard Gauge Company affords that firm special facilities for this class of work. Some little time will necessarily elapse before the engineer, Bernard R. Green, will be able to compare the merits of the different shelves and the prices and render a decision.

The firm of Wallace & Sons, brass manufacturers, Ansonia, Conn., now in the hands of receivers, have made a proposition to their creditors to pay them 60 per cent. of the face value of their claims, or the firm will place the whole business in the hands of three trustees, to be run for the benefit of the creditors.

The Maddox Wire Netting Company of Cooperstown, N. Y., have been incorporated

to do business at that place. The directors are James F. Clark, John J. Doane and Albert Lane of Cooperstown.

The working force of the Erie repair shops at Buffalo, N. Y., has been reduced by the laying off of 330 men.

The St. Louis, Mo., car works, which have been closed for some time, have resumed operations with a day and night force.

The employees of the locomotive shops of the New York, Lake Erie & Western Railroad, at Susquehanna, Pa., have been placed on seven hours' time.

The company making high grade art metal castings, at Passaic, N. J., under the title of the Passaic Art Casting Company, have changed their name to the New Jersey Art Metal Company, with a New York office at 35 Warren street.

#### American Copper Cable Wire.

Sometime since the Bennett-Mackay Cable Company placed a contract for a new ocean cable. It is understood that the Siemens people are to construct this cable, but that a large share of the wire and copper which is to go into it will be of American manufacture. We understand that the contract for the wire, involving about 1500 tons, was distributed among three makers, one in England, Felsen & Guilleaume, Cologne, Germany, and John A. Roebling's Sons Company of Trenton, N. J. Probably the most interesting fact in connection with the transaction is that the copper rods for drawing the wire for the English part of the contract are to be made by the John A. Roebling's Sons Company, the latter, therefore, making one third of the heavy copper conductor wire of the cable and the rods for one-third of the entire copper wire required. The John A. Roebling's Sons Company have practically completed their shipment of wire. The lot, taken as a whole, is probably the best lot of wire ever produced. None was passed at less than 99 per cent. of Dr. Matthiessen's standard. The average of all tests was 99.4 per cent. Only 104 pieces of wire were thrown out and with one exception they were above 98 per cent., while the aggregate of all the wire actually shipped was 99.873 per cent.

David M. Ripley has been appointed receiver for the firm of Copeland & Bacon, manufacturers of hoisting machinery, at 85 Liberty street, New York, who had branches in Philadelphia and Chicago, in proceedings to dissolve the partnership. Their trouble is attributed to inability to collect outstanding accounts and the failure of debtors to pay their obligations. The liabilities are not stated, but the nominal assets are placed at \$35,000 in machinery, accounts and patterns. The accounts are nominally \$25,000, worth at least \$15,000.

A bill has been introduced in the Senate making some sweeping changes in the *personnel* of the navy with a view to its reorganization and the improvement of its efficiency. Among other reforms contemplated by the bill is the gradual reduction of the marine corps and its eventual abolishment.

A town in Maryland, Hyattsville by name, adopted some time since the Henry George idea of laying all of its tax burdens on land values. At a town meeting held a few days ago it was, however, unanimously decided to return to the former method of taxation, the single tax experiment having utterly failed to work when put into actual practice.

Pig Iron Production Stationary.

The net result of the changes which have taken place in the condition of the blast furnaces of the United States leaves them in pretty nearly the same position with which the new year was entered upon. The charcoal capacity at work is the lowest on record for many decades.

On February 1 the active furnace plant, grouped according to fuel used, possessed the following weekly capacity:

Fuel.		
Anthracite.....	27	13,627
Coke.....	80	81,970
Charcoal.....	18	3,645
Total February 1.....	125	99,242
Total January 1.....	130	99,087
Increase or decrease.....	- 5	+ 155

The weekly product of all the furnaces on February 1 compared as follows with that of preceding periods:

	Furnaces in blast.	Capacity per week. Gross tons.
February 1, 1894.....	125	99,242
January 1.....	130	99,087
December 1, 1893.....	130	99,379
November 1.....	117	80,070
October 1.....	114	73,895
September 1.....	125	89,434
August 1.....	169	107,042
July 1.....	220	153,762
June 1.....	244	174,029
May 1.....	251	181,551
April 1.....	255	178,858
March 1.....	255	176,478
February 1.....	251	171,201
January 1.....	246	173,068
December 1, 1892.....	246	176,271
November 1.....	244	171,082
October 1.....	236	158,027
September 1.....	236	151,648
August 1.....	238	155,138
July 1.....	254	169,151
June 1.....	269	173,674
May 1.....	268	177,886
April 1.....	280	185,462
March 1.....	305	193,902
February 1.....	308	187,353
January 1.....	305	188,082
December 1, 1891.....	298	188,135

On February 1 the charcoal furnace capacity stood as follows :

Charcoal Furnaces, February 1, 1894.				
Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.
New England.....	13	1	60	12
New York.....	5	1	102	4
Pennsylvania.....	13	2	156	11
Maryland.....	6	0	0	6
Virginia.....	13	0	0	13
Ohio.....	9	5	441	4
Kentucky.....	3	1	90	2
Tennessee.....	8	0	0	8
Georgia.....	3	1	253	2
Alabama.....	13	2	611	11
Missouri.....	20	5	1,932	15
Wisconsin.....	2	0	0	2
Texas.....	4	0	0	4
Washington.....	1	0	0	1
Oregon.....	1	0	0	1
Totals.....	118	18	3,645	100

As compared with previous months, the record of active charcoal furnaces stands as follows:

	Furnaces in blast.	Capacity per week.
February 1, 1894.....	18	3,645
January 1.....	21	4,099
December 1, 1893.....	26	4,950
November 1.....	26	5,084
October 1.....	28	5,496
September 1.....	28	5,700
August 1.....	34	5,563
July 1.....	35	7,224
June 1.....	34	8,034
May 1.....	38	8,595
April 1.....	38	8,729
March 1.....	36	8,623
February 1.....	37	8,934
January 1.....	38	8,865
December 1, 1892.....	41	9,509
November 1.....	42	9,540

October 1.....	39	9,174
September 1.....	42	9,657
August 1.....	41	8,331
July 1.....	42	9,964
June 1.....	48	11,613
May 1.....	40	10,100
April 1.....	44	10,859
March 1.....	40	11,734
February 1.....	49	10,991
January 1.....	43	11,164
December 1, 1891.....	52	11,033

During February Mt. Vernon, in Ohio, Newberry, in Michigan, and No. 2 Shelby, in Alabama, started. The latter is at work simply for the purpose of using up wood in danger of decay, and not on order. Hinkle, in Wisconsin, blew out after a brilliant campaign. Midland in Missouri stopped for good.

The position of the coke furnaces was as follows:

Coke Furnaces, February 1, 1894.				
Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.
New York.....	1	3	2,863	4
Pennsylvania:				
Pittsburgh district.....	24	16	27,029	8
Spiegel.....	2	2	1,600	0
Shenango Val. & Co. nemauagh Valley.....	16	9	8,526	7
Spiegel.....	1	0	0	1
Yonkioheny Valley.....	3	1	750	2
Miscellaneous.....	4	0	0	4
Maryland.....	5	0	0	5
West Virginia.....	1	0	0	1
Wheeling District.....	8	2	2,396	6
Ohio:				
Mahoning Val. Central and Northern.....	14	4	5,721	10
Hocking Val. Hanging Rock.....	14	3	813	13
Indiana.....	2	0	0	2
Illinois.....	19	0	0	19
Minnesota.....	1	0	0	1
Wisconsin.....	5	1	622	4
Missouri.....	6	0	0	6
Colorado.....	3	0	0	3
The South:				
Virginia.....	22	8	5,449	14
Kentucky.....	7	3	1,387	4
Alabama.....	38	11	10,517	27
Tennessee.....	14	4	1,980	10
Georgia.....	2	1	626	1
N. Carolina.....	1	0	0	1
Totals.....	260	80	81,970	180

As compared with previous months, the active coke furnaces make the following showing:

	Furnaces in blast.	Capacity per week.
February 1, 1894.....	80	81,970
January 1.....	80	81,997
December 1, 1893.....	72	78,241
November 1.....	57	58,820
October 1.....	52	53,061
September 1.....	51	56,976
August 1.....	84	77,907
July 1.....	122	117,072
June 1.....	140	132,079
May 1.....	146	139,788
April 1.....	145	135,488
March 1.....	145	138,579
February 1.....	140	129,396
January 1.....	138	131,731
December 1, 1892.....	136	133,160
November 1.....	133	130,673
October 1.....	128	118,895
September 1.....	128	114,538
August 1.....	131	117,984
July 1.....	140	127,433
June 1.....	145	128,852
May 1.....	147	132,313
April 1.....	152	138,116
March 1.....	163	143,490
February 1.....	167	138,268
January 1.....	163	138,611
December 1, 1891.....	162	142,747

Work has been resumed by Sharon, in the Shenango Valley; Norton, in Kentucky; Hazelton and Tod, in the Mahoning Valley, and Rockwood, in Tennessee. The following furnaces blew out or banked during January: Sparrow's Point, in Maryland; Mattie, in the Mahoning Valley, and Dayton and one South Pittsburg in Tennessee.

The following is the status of the anthracite furnaces:

Anthracite Furnaces, February 1, 1894.

Location of furnaces.	Total number of stacks.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New York.....	18	2	1,167	16	5,519
New Jersey.....	11	3	1,742	8	3,150
Spiegel.....	3	1	80	2	170
Pennsylvania:					
Lehigh Valley.....	44	7	2,484	37	14,015
Spiegel.....	1	0	0	1	60
Schuylkill Valley.....	27	6	3,245	21	9,335
U. Susquehanna Valley.....	14	3	1,800	11	3,494
L. Susquehanna Valley.....	16	0	0	16	7,020
Spiegel.....	1	1	456	0	0
Lebanon Valley.....	15	4	2,653	11	4,905
Totals.....	150	27	13,627	123	47,668

For a number of months past our records of active anthracite furnaces show the following:

	Furnaces in blast.	Capacity per week.
February 1, 1894.....	27	13,627
January 1.....	29	13,081
December 1, 1893.....	32	16,188
November 1.....	34	16,166
October 1.....	34	15,398
September 1.....	43	20,758
August 1.....	51	23,572
July 1.....	63	29,298
June 1.....	70	33,916
May 1.....	67	33,163
April 1.....	72	34,641
March 1.....	74	34,773
February 1.....	74	32,371
January 1.....	70	32,772
December 1, 1892.....	69	33,602
November 1.....	69	30,869
October 1.....	69	29,958
September 1.....	66	27,455
August 1.....	66	28,821
July 1.....	72	31,754
June 1.....	76	33,209
May 1.....	81	35,473
April 1.....	84	36,487
March 1.....	89	38,678
February 1.....	92	38,124
January 1.....	94	38,307
December 1, 1891.....	85	34,905

Although the number of furnaces running has fallen off, the capacity is slightly greater, which is due to the fact that some small producers have stopped, while larger ones have resumed. There have blown out during January one New Jersey spiegel, two Allentown Rolling Mills, one Keystone, in the Schuylkill Valley, and Bloom, in the Upper Susquehanna. Work was started during last month at one Crane, one Lackawanna and Lebanon Valley.

Stocks.

The position of stocks, sold and unsold, as reported to us February 1, was as follows, the same furnaces being represented as in former months:

	Nov 1.	Dec. 1.	Jan. 1.	Feb. 1.
Anthracite pig.....	134,137	134,475	145,197	117,112
Coke pig.....	503,806	485,292	486,987	501,269
Charcoal pig.....	200,450	199,220	206,260	203,390
Totals.....	838,413	818,987	838,444	851,771

We print elsewhere a statement of the record made at the South works of the Lackawanna Iron & Steel Company of Scranton, Pa. Telegrams just arrived show that even that record was broken on Tuesday, when the day shift in the Bessemer plant made 68 heats, producing 618 tons of ingots, and the night shift reached 69 heats, making 626 gross tons of ingots.

The Journal of Commerce states that the annual report of the Illinois Steel Company for the year ended December 31 will not be ready until the middle of this month. The report will show a surplus of \$534,000. A director says that the declaration of a dividend will not be considered.



### Our Iron Imports and Exports for 1893.

The Bureau of Statistics has just issued the December statement, showing the imports and exports for the year 1893. The following table shows the quantities of imports. We believe that these figures include the quantities brought in for the purpose of subsequent export under the drawback arrangement:

	Imports.	
	Twelve months— ending December 31, 1893.	1892.
Iron and steel and manufactures of:	Gross tons.	Gross tons.
Iron ore .....	526,951	806,585
Pig iron .....	54,394	70,125
Scrap iron and steel, fit only to be remanufactured.....	6,273	29,223
Bar iron, rolled or hammered.....	14,896	19,282
Bars, railway, of iron or steel, or in part of steel.....	2,888	347
Hoops or ties for baling purposes, barrel hoops, and hoop or band iron or steel, flared, spayed or punched.....	1,697	1,011
Hoop, band or scroll iron or steel.....	1,017	1,176
Ingots, blooms, slabs, billets and bars of steel, and steel in forms, n. e. s. ....	26,868	30,586
Sheet, plate and taggers' iron or steel..	37,130	26,959
Tin plates,terne plates and taggers' tin.....	253,489	268,223
Wire rods of iron or steel.....	35,017	42,423
Wire, and wire rope and strand, iron or steel .....	4,145	3,831
Manufactures of, n. e. s.:		
Anvils.....	589	748
Chains.....	364	544
Cutlery.....	Value. \$1,216,783	Value. \$1,361,000
Files, file blanks, rasps and floats....	59,752	82,714
Firearms.....	141,123	412,045
Machinery.....	2,512,735	3,077,711
All other.....	2,473,231	2,970,871
Total values .....	\$29,268,073	\$33,355,535

The exports have shown a little improvement, as shown in the following table:

	Exports.	
	Twelve months— ending December 31, 1893.	1892.
Iron and steel and manufactures of:	Gross tons.	Gross tons.
Pig iron.....	24,570	15,427
Band, hoop and scroll iron.....	255	33
Bar iron.....	1,842	983
Car wheels.....	13,426	9,566
Ingots, bars and rods of steel.....	358	205
Nails and spikes:		
Cut.....	5,888	6,816
Wire wrought, horse-shoe, and all other, including tacks.....	1,225	954
Wire.....	16,725	15,085
Plates and sheets:		
Of iron.....	1,895	259
Of steel.....	585	202
Railroad bars or rails:		
Of iron.....	164	486
Of steel.....	19,712	7,496
Steam engines and parts of:	No.	No.
Fire engines.....	2	2
Locomotive engines.....	205	141
Stationary engines.....	402	343
Castings, n. e. s.....	Value. \$504,893	Value. \$540,523
Cutlery.....	173,779	131,324
Firearms.....	704,560	724,499
Locks, hinges and other builders' hardware....	2,495,099	2,575,847
Machinery, n. e. s.....	11,512,576	10,348,655
Printing presses.....	314,563	293,261
Saws and tools.....	1,886,090	1,838,133
Scales and balances....	372,419	359,253
Sewing machines.....	2,456,487	2,848,165
Boilers and parts of engines.....	574,612	567,046
Stoves and ranges.....	235,796	205,348
All other manufactures	5,000,040	3,875,114
Total values.....	\$30,159,150	\$27,900,862

It will be observed that there has been an increase in nearly all the leading lines.

### The Tariff Situation.

WASHINGTON, D. C., February 6, 1894.

In addition to Senator Voorhees' public statement the Senator informed the correspondent of *The Iron Age* that he expected to be able to report the House tariff bill to the Senate in ten days, or perhaps sooner. The majority members of the committee, he intimated, are already fully half way through with the consideration of the bill, having commenced their labors on it about a week ago.

They have restored coal to the dutiable list at 50 cents a ton and are disposed also to place a duty of 50 cents a ton on iron ore and a small duty on sugar to take the place of the sugar bounty repealed.

There has been a conference of the majority at which an understanding was reached in reference to the character of the amendments to be made and which would receive their support. It can be understood by the manufacturers and others interested that the Senate committee amendments will not be material and that the bill will receive the entire support of the majority, except possibly two of the Populists, and from present indications, on account of the income tax, the two Colorado Senators.

There is some question about the two New York Senators on account of the income tax, which is unanimously opposed in their State.

The final decision against hearings is simply confirmatory of what *The Iron Age* has been saying ever since the majority of the committee started the circular of inquiry scheme. The bill will consume some time in discussion, but the minority in the Senate intend to pursue about the same course in its consideration as did their friends in the House.

From present indications the Wilson tariff bill, without material amendment, will be a law by May 1. The minority are not disposed to go further than reasonable debate and a vote for record.

Dawson & Goodwin have opened a machine store at 57 South Canal street, Chicago, where they will handle a full line of machine tools, including engine lathes, drill presses, shapers, special turret lathes, pulley lathes, radial drills, milling machines, punches, shears, &c. Mr. Dawson has conducted a machine shop in that city for some time, and more recently has been salesman for the Reeves Pulley Company. Mr. Goodwin has been with the Lodge & Davis Machine Tool Company for several years, having opened their Chicago store and acted as manager until a short time ago.

Reports from Philadelphia and cables from England indicated that a shipment of scrap had been made to Glasgow, Scotland. Our Philadelphia correspondent, who has investigated the subject, telegraphed to us that the shipment in question amounted to about 10 tons of rolls and pests of a value of a little over \$100. The world's scrap trade need, therefore, not get excited over the exports from this country as yet.

Negotiations are in progress with a view to the pooling of the principal transatlantic steamship lines. Confer-

ences are to be held in London and Hamburg, and it is believed that an agreement on the subject will be reached. The European Continental lines are announced to have already formed a combination of this nature.

### Exports and Imports of Metal.

The official statistics of exports and imports of the metals are just out. Copper has had an unprecedented year. Estimating the fine contents of the 41,752 tons of Matte exported in 1893 at 50,000,000 pounds, we have:

Exports of Copper, 1893.	
	Pounds.
Ingots.....	113,984,128
Matte.....	50,000,000
Re-export foreign Ore .....	1,012,267
Re-export foreign Ingot.....	1,007,554
Total.....	166,003,949

The figures for 1892, estimating the contents of 50,495 tons of Matte at 66,000,000 pounds, were as follows:

Exports of Copper, 1892.	
	Pounds.
Ingots.....	30,515,736
Matte.....	66,000,000
Re-exports foreign Ore.....	707,739
Re-exports foreign Ingot.....	1,274,410
Total.....	98,497,885

This shows an increased export of 167,500,000 pounds. The imports were:

Imports of Copper, 1893.	
	Pounds.
In Ore and Pyrites.....	7,723,387
In Pig.....	5,536,690
Total.....	13,260,077

For 1892 the totals were:

Imports of Copper, 1892.	
	Pounds.
In Ore and Pyrites.....	8,107,582
In Pig.....	1,724,772
Total.....	9,832,354

The imports of Lead in Mexican Ores in 1893 were 29,770 net tons, as compared with 26,734 net tons in 1892. There were refined in bond and exported 35,000 tons of foreign base bullion in 1893, as compared with 12,874 net tons in 1892.

The exports of Spelter were 3639 net tons in 1893, as compared with 6247 net tons in 1892.

The Altoona Rolling Mill, at Altoona, Pa., has started up. The men go to work at a 10 per cent. reduction.

The rate of freight on iron and steel in carload lots is 15 cents per hundred pounds from Pittsburgh to Chicago.

The Chateaugay Ore and Iron Company of Chateaugay, N. Y., which has been idle for several months past, is making extensive repairs preparatory to resuming work early in the spring.

The British Museum possesses an iron axe head of 1370 B. C., which is the oldest authenticated iron implement known.

It is reported that a vein of natural gas has been struck in the vicinity of Robinson, Ill.



## The Iron and Metal Trades.

The developments during the past week have emphasized the tendency toward improvement. As yet the better feeling is very unevenly distributed and in some branches of the trade sellers smile very skeptically over the sanguine utterances made. Even where the improvement has been most marked it is regarded merely as a flash in the pan by many.

During the week there have been placed orders for about 30,000 tons of Billets in the Pittsburgh market and about 11,000 in the Chicago market. There have also been sales in the East. The low sellers have marked up their prices and belated buyers have been forced to pay \$16 @ \$16.25, Pittsburgh. The Wire industry has now covered for the next few months and a waiting game may develop. If there is any considerable demand for Soft Steel in the near future prices will hold and may harden. It depends now whether other consumers of Soft Steel will gather in enough business to force them to cover. The usual stories of a short interest are again afloat.

It is useless to deny that the pounding of the market in Shapes, Plates and Bars is still going on. In Beams the latest cuts by one conspicuous mill have not been followed. In the other lines a number of other mills East and West are still in the fight.

Still, it is true that in all finished Iron and Steel there is more business, and we must be getting near the point when some must be in a position to retire from the scrimmage at least temporarily. Delayed orders are coming up now. Thus the Park avenue improvement in New York, the joint work of the city and the New York Central road, is to go forward. It calls for about 18,000 tons of Plates and Angles, of which the bulk of the former is to be made by Pittsburgh concerns while Eastern mills will roll the latter. Then the big bridge order for New Orleans, taken by Phoenix, gives a good deal of work. The Portland Plate order has been captured by a Chicago house. Pittsburgh reports a 5500-ton order for Grooved Skelp, and Philadelphia notes a moderate gas tank job.

Northern furnaces seem to be doing a little better among the founders, while the markets controlled by the Southern product are dull and weak. The producers of standard Irons have been making a drive at their customers recently. The latter, while contracting for the old brands, seem to believe that they have ample time to talk to the sellers of the newer Irons later on.

Our monthly Pig Iron statistics, published elsewhere, show that there has been little change since early December in the productive capacity at work.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., February 6, 1894.

Things are beginning to look brighter in the Iron and Steel trade. There is, of course, plenty of room for complaints, both as regards the volume of business and the extremely low prices at which it is taken, but all the same the outlook is decidedly more encouraging. The main point is that there is more business, in addition to which there is an almost absolute certainty of still more business in the near future. This may require time to develop, but in the meanwhile mills are securing more work almost every day. Not enough to cause any great activity, but enough to show that the current is in the right direction. Mills that have found it difficult to run every second week can now run three weeks out of four, mills that run three and four days a week are now making it four and five, and sometimes six days, and so on all through the list. Several important orders have been taken within the past week, one of 25,000 tons by the Phoenix Iron Company for bridge work, some car orders, and some orders at boiler works and shipyards, which will require considerable material inside 30 or 60 days. Miscellaneous work is also coming out freely, so that it does not require much foresight to see that the demand for manufactured Iron and Steel will be larger during the next 60 days than it has been at any time since last spring. Prices are very unsatisfactory, and may remain so for a while longer, but with an improved demand they will naturally adjust themselves to the changed conditions. Taking everything into consideration, it may be said that the feeling in the trade is very hopeful, and as it appears to be based on substantial grounds, we expect to report a steady improvement as the season advances.

**Pig Iron.**—There is no very decided change in the situation, but such as there is appears to be in sellers' favor. Consumers are more inclined to talk business, and in some cases are taking larger lots, and as a rule without concession in prices. Sellers appear to be gathering courage, and while they do not feel warranted in asking more money, they are not disposed to consider anything that involves concessions. The supply of Iron is still quite liberal, so that it is hardly likely that there will be any material change in prices, although in times like these the market will bear watching. After such a period of extraordinary depression there is a possibility of a sudden rebound, and while there is no particular reason for expecting it, it will do no harm to keep a sharp lookout. Sales are increasing somewhat, but there is no difficulty in placing orders at last week's prices, and until there is a bigger demand, or a smaller supply, it is not likely that prices will improve. General quotations for Philadelphia or near by points are about as follows:

No. 1 Foundry .....	\$13.00 @	\$14.00
No. 2 Foundry .....	12.50 @	13.25
Standard Gray Forge .....	11.25 @	11.75
Ordinary Gray Forge .....	10.75 @	11.00

**Steel Billets.**—The market has made a sudden turn since last week, and from extreme weakness there is apparently a change to considerable strength. Asking prices to-day are \$18.25 @ \$18.50, delivered, but it is doubtful if sales of any importance have been made, as considerable quantities were taken last week and buyers will hardly pay a dol-

lar advance unless compelled to do so to cover immediate requirements. Prices are low enough at present figures, but it will require time to see what the demand is going to be before any definite idea can be formed as to the ultimate outcome. At present holders are firm, and it looks as though prices could be maintained—perhaps advanced, but all depends upon consumptive requirements.

**Finished Material.**—There is not much change in the general situation, and prices still remain at the lowest yet quoted. Prospects for an increase in the volume of business are more encouraging, however, and manufacturers begin to feel that they will soon be able to run fuller time than they have done within the past several months. Some good sized orders have been placed, others are in sight, and as there is a good day to day demand, the feeling is quite hopeful in regard to the spring trade. Prices are very low, however, and when the quantity called for is at all important quotations shrink to very small proportions. An order for a few hundred tons of Ship Plate was done at less than 1.3¢, delivered, and one of upward of 1000 tons for a gas holder is expected to be taken at an equally low figure, with Bars in round lots at about 1.25¢, and Angles at very little over 1.35¢. Small lots bring more money, but in anything big enough to attract competition prices cannot get much over the figures named. The one encouraging feature is the increasing demand from large consumers. The small trade has kept up pretty well, but it requires big orders to make an impression, and the outlook for these is quite encouraging. The 25,000 ton order taken by the Phoenix is a good beginning, and if some of the postponed work is taken up as it ought to be, and probably will be now that money is easier, the mills will probably do very well this spring. General quotations for small lots are about as follows:

Grooved Skelp, delivered.	1.37½¢ @	1.40¢
Best Refined Bars .....	1.40¢ @	1.45¢
At interior points .....	1.25¢ @	1.30¢
Tank Steel .....	1.40¢ @	1.50¢
Heavy Plates .....	1.45¢ @	1.50¢
Shell .....	1.60¢ @	1.75¢
Flange .....	1.90¢ @	2.00¢
Angles .....	1.50¢ @	1.60¢
Beams and Channels .....	1.60¢ @	1.80¢

**Old Material.**—There is a little more inquiry, and for Steel Scrap there is an improved demand, but there is no quotable change in prices. Nominal quotations are about as follows:

Heavy Melting Steel .....	\$10.50 @	\$11.50
Light Melting Steel .....	8.00 @	9.00
No. 1 Wrought Scrap .....	11.00 @	12.00
Machinery Cast .....	9.50 @	10.50
Wrought Turnings .....	9.00 @	10.00
Cast Borings .....	6.00 @	7.00
Old Iron Rails .....	13.00 @	13.50

## Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, February 7, 1894.

There has been little more than a jobbing demand from the foundries in this district and mainly for single car-load lots during the week, which in the aggregate foots up rather more than for either of several past weeks, the largest sale in any one lot being 550 tons. There are some deliveries being made on previous contracts, but not to any large extent, and the market is a weak one for all grades and kinds of Southern Iron, with offerings at 25¢ @ 50¢ per ton lower in many instances,

without inducing buyers to take the lead. In fact, there is no disposition on the part of buyers to anticipate their wants, for although they concede that prices are low enough, yet their experience has been that each subsequent purchase has been at lower prices, and they are waiting until they need the Iron, with the expectation of a similar state of things. It is evident, however, that many of the weak furnaces which have made low prices are out of the market as sellers now. The low prices reported for Pig Iron and for the Finished Material in other districts have a demoralizing effect here, and low prices prevail for Charcoal as well as other kinds of Iron. Quotations are merely nominal, as follows:

**Foundry.**

Southern Coke, No. 1.....	\$11.50 @ \$11.75
Southern Coke, No. 2.....	10.50 @ 10.75
Southern Coke, No. 3.....	10.00 @ 10.25
Ohio Soft Stone Coal, No. 1.....	15.25 @ 15.50
Ohio Soft Stone Coal, No. 2.....	14.25 @ 14.50
Lake Superior Coke, No. 1.....	15.00 @ 15.25
Lake Superior Coke, No. 2.....	14.00 @ 14.25
Hanging Rock Charcoal, No. 1.....	17.50 @ 18.00
Hanging Rock Charcoal, No. 2.....	17.50 @ 17.75
Tennessee Charcoal, No. 1.....	13.50 @ 14.00
Tennessee Charcoal, No. 2.....	12.50 @ 13.00

**Car Wheel and Malleable Irons.**

Standard Southern Car Wheel.....	17.00 @ 17.25
Lake Superior Car Wheel and Malleable.....	16.50 @ 17.00

**Forge.**

Gray Forge.....	9.50 @ 9.75
Mottled Coke.....	9.25 @ 9.50

**Chicago.***(By Telegraph.)*

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, February 7, 1894.

The improvement in business noted last week has continued, and the market gives evidence of broadening. The favorable reports coming from all sections of the country are influencing buyers to cover their requirements further into the future, and an improvement is perceptible in branches of trade which had up to this time been unaffected. The substantial advance made on Steel has caused buyers to realize more thoroughly that bottom has actually been reached and that if they do not quickly stock up they will probably have to pay more than the prices current. Apparently the only thing needed to bring about a very substantial recovery in the Iron trade is the placing of large orders for Steel Rails. The railroads, however, are hanging back in this respect.

**Pig Iron.**—Local Coke Iron was much more active last week than during the previous week. It is known that one large consumer, who has for a long time been very conservative in his purchases, concluded that the time had arrived to stock up and therefore placed contracts covering his wants for the greater part of the year. His prominence in the trade causes his action to have a favorable effect on other buyers of Foundry Irons. The foundry trade shows signs of improvement and quite a number of prominent foundrymen are of the opinion that from this time forward business in this line is bound to increase. The demand for Southern Iron is affected by the very low prices quoted on local brands and transactions have been confined to small lots, with one exception in which a 1000-ton lot of Southern Soft was purchased for special use. Lake Superior Charcoal continues very quiet. Quotations are given as follows, for cash:

Lake Superior Charcoal.....	\$15.30 @ \$15.50
Local Coke Foundry, No. 1.....	12.50 @ 13.00
Local Coke Foundry, No. 2.....	12.00 @ 12.50
Local Coke Foundry, No. 3.....	11.75 @ 12.00

Local Scotch.....	13.00 @ 13.50
Ohio Strong Softeners No. 1.....	15.00 @ 15.50
Southern Silvery, No. 1.....	13.00 @ 13.25
Southern Silvery, No. 2.....	11.50 @ 11.65
Southern Coke, No. 3.....	11.00 @ 11.50
Southern, No. 1, Soft.....	11.50 @ 11.65
Southern, No. 2, Soft.....	11.00 @ 11.50
Tennessee Charcoal, No. 1.....	16.00 @ 16.50
Tennessee Charcoal, No. 2.....	15.00 @ 15.50
Southern Gray Forge.....	10.60 @ 10.85
Alabama Car Wheel.....	18.00 @ 18.50
Jackson County Silvery.....	16.00 @ 16.50
Other Ohio Silvery.....	15.00 @ 15.50

**Bars.**—In a general way the course of the market is somewhat disappointing. A larger volume of business had been expected in view of the better feeling in other lines, nevertheless the inquiry has improved and some round lots have been placed, but orders have mainly been for single carloads. Makers believe that the tide is about turning, and that much heavier business is assured in the near future. Specifications on season contracts are coming in slowly, prices for mill shipments are about as they have been, with quotations on Bar Iron at 1.25¢ @ 1.35¢, Chicago. Steel Bars are quoted at 1.35¢ @ 1.40¢ for the best makes, but products of mills less widely known are offered at low rates. Jobbers report an increased business from stock with prices showing a drooping tendency, and Bar Iron in small lots can now be quoted at 1.40¢ @ 1.50¢, while Steel sells at 1.50¢ @ 1.60¢.

**Structural Material.**—After numerous contradictory statements the contract for the Milwaukee viaduct appears to have been actually let to C. L. Strobel of this city. Some small contracts for buildings at outside points are now being figured, but large operations are slow in maturing. The general demand for bridge and building work is quite light, but prospects for an early improvement in this direction are better. It is believed that the bottom in price of Structural Material has now been reached and makers are freely predicting that Beams will soon command a high price. This is the first time for over two years that conditions would seem to warrant such a prediction. Quotations at present are as follows for Chicago delivery: Beams and Channels, 1.45¢ @ 1.50¢; Tees, 1.75¢ @ 1.80¢; Angles, 1.40¢ @ 1.45¢; Universal Plates, 1.50¢ @ 1.60¢. Small lots from stock are sold at an advance of 10¢ @ 15¢ @ 100 above these prices.

**Plates.**—A Chicago house has secured the Portland order for about 600 tons of Plates. The general demand is fair and gradually improving. Orders from stock are a little larger than they have been, but shipments of small lots continue in many cases to be made direct from mills. Manufacturers are withdrawing their lowest quotations owing to the advance in raw material. Mill shipments, Chicago delivery, are quoted as follows: Tank Steel, 1.50¢ @ 1.60¢; Flange Steel, 1.90¢ @ 2¢; Fire Box, 2.75¢ @ 5¢. Store prices are as follows: Iron or Steel Sheets, Nos. 10 to 14, 2¢ @ 2.10¢; Tank Steel, 1.90¢ @ 2¢; Flange Steel, 2.20¢ @ 2.45¢; Boiler Tubes, 70 and 5¢ off.

**Sheets.**—Business in Black Sheets is now assuming its normal proportions, as manufacturing customers are purchasing more freely. Quotations on mill shipments of No. 27 Common are about 2.60¢, Chicago, while small lots from stock are a little lower at 2.75¢ @ 2.80¢. Prices on Galvanized Iron have receded to 75 and 10 and 2½¢ off for mill shipments of Juniata, but there are indi-

cations of more firmness among manufacturers; and it is likely that an upward movement will soon take place. Small lots from stock are selling down to 75¢ off. Sheet Copper is unchanged at 30¢ @ 35¢ off, according to quantity.

**Merchant Steel.**—The condition of business in this line has not changed from last report, except that small orders for early shipment are more plentiful. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery, Tire and Open Hearth Spring Steel, 1.85¢ @ 1.95¢; Ordinary Bessemer Machinery, 1.55¢ @ 1.65¢; Bessemer Tire, 1.50¢ @ 1.60¢; Ordinary Tool Steel, 6¢ @ 7¢; Specials, 12¢ and upward.

**Billets and Rods.**—Sales of Billets during the past week have aggregated about 11,000 tons, at an advance of 50¢ above the price of the previous week. Inquiries are reported for at least 20,000 tons more, which makers expect to sell in a few days. They are withdrawing quotations in many instances. The price of local Billets is now \$18.50, Joliet. The Illinois Steel Company are sold up on Wire Rods to July 1. Eastern Wire Nail makers have made urgent inquiries for Rods in this market by wire. Other Western Rod mills are rapidly selling up to their capacity at \$25, and from present indications will be out of the market at an early day.

**Rails and Track Supplies.**—Nothing new has transpired in the Steel Rail situation. The Joliet Works have rolled some rails the past week for small orders taken for delivery this month, but there is no immediate prospect of the South works being put in operation. The railroad companies appear to be in no hurry about closing contracts for their season's requirements, evidently believing that no danger exists of an advance in prices. Quotations continue unchanged at \$25 @ \$27, according to quantity. Track supplies are quotable at 1.40¢ for Splice Bars, 2.45¢ @ 2.50¢ for Track Bolts with hexagon Nuts and 1.80¢ @ 1.85¢ for Spikes.

**Old Rails and Car Wheels.**—The movement of Old Iron Rails has changed considerably from former conditions. Railroad companies seem to be able to make favorable contracts for the exchange of Old Rails for new material, and are, therefore, disinclined to sell straight at the very low prices which they would be obliged to accept. Under the circumstances it is a difficult matter to make quotations, but nominally the rate seems to be about \$12 @ \$12.50, although consumers claim that \$10.50 @ \$11 would more nearly represent the price which they are willing to pay. Old Steel Rails are worth \$6.75 for remelting, on a parity with Pittsburgh quotations. Selected long lengths command special prices, depending on the negotiations between buyers and sellers. Old Car Wheels have been quiet during the week with quotations continued at \$10.50 @ \$11.

**Scrap.**—The only movement in Scrap worth noting has been in Heavy Cast. Consumers of Wrought appear to be well supplied for the present and are practically out of the market. The market price of No. 1 Forge continues nominally \$8.50 @ \$9; Heavy Cast \$8; Stove Plate \$6.

**Metals.**—Carload lots of Lake Copper are quotable at 10½¢, and Casting Copper 9½¢. Spelter seems to be quite firm, and while some sellers quote 3.40¢

others are asking 3.50¢ @ 3.52½¢. Pig Lead is a little firmer and carload lots are now quoted at 3.15¢.

R. D. Kuhn, who has for the past year and a half managed the Chicago branch house of Park, Brother & Co. of Pittsburgh, has removed to Cleveland, where he will resume the management of the local interests of the same firm, having been stationed at Cleveland prior to his transfer to Chicago. The change has no significance except that he was badly needed in his old field. The Chicago business will hereafter be attended to by E. S. Jackman, 901 The Rookery, who is, however, not released from his former responsibilities in connection with the St. Louis, Denver and Detroit branches and the E. S. Jackman Company.

## St. Louis.

(By Telegraph.)

Office of The Iron Age,  
Bank of Commerce Building,  
St. Louis, February 7, 1894.

**Pig Iron.**—The past week has been without feature. Sales have been limited and prices continue unchanged. There is nothing in the situation to warrant the belief that any improvement can be expected, at least not until business shows more signs of reviving than is noticeable at present. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry	.....	\$12.00 @ \$12.25
Southern Coke, No. 2 Foundry	.....	11.00 @ 11.25
Southern Coke, No. 3 Foundry	.....	10.50 @ 10.75
Southern Gray Forge	.....	10.00 @ 11.25
Southern Car Wheel	.....	17.00 @ 18.00
Lake Superior Car Wheel	.....	16.50 @ 17.00
Ohio Softeners	.....	11.75 @ 16.25

**Bar Iron.**—Business is extremely dull both from store and mill. Jobbers ask 1.50¢ @ 1.55¢, while mills quote 1.25¢, f.o.b. cars East St. Louis. The railroads and car shops are not in the market, and until that trade is heard from any improvement is out of the question.

**Barb Wire.**—There is a good demand for Barb Wire, and as mills find it almost impossible to secure Rods, it is difficult for them to make prompt shipments. At the meeting held in Chicago on the 5th inst., it was practically decided to advance Barb Wire 15¢ per hundredweight, the advance to take place as soon as a few preliminaries are arranged, the advanced price will make Painted 2.05¢, and Galvanized 2.45¢. This advance is timely, as the prices heretofore ruling were admitted to be so close to cost that there was no margin in its manufacture. Carload lots are quoted 5¢ per hundredweight less than above prices.

**Wire Nails.**—The Nail market continues in the unsettled condition noted in our last issue. The price of \$1.10 made by a local Hardware house has not as yet been withdrawn, and we are informed that there is no intention of its immediate withdrawal. This house advise us that they will sell any quantity at this price, and do not limit their sales to 25 kegs, as stated in this report last week. Mills quote \$1.20 for carload lots, while jobbers ask \$1.30 @ \$1.35, according to quantity.

**Rails and Track Supplies.**—The same monotonous report of no improvement has to be again made. Railroads are only ordering what they absolutely

require; as a result their specifications are extremely light. We quote as follows: Splice Bars, 1.45¢ @ 1.50¢; Spikes, 1.80¢ @ 1.85¢; Bolts, Square Nuts, 2.25¢; with Hexagon Nuts, 2.35¢; Links and Pins, 1.80¢ @ 1.85¢. Old Iron Rails nominally \$13. Steel Rails, \$26 @ \$27, according to quantity.

**Pig Lead.**—At 3.15¢ the market is firm and not much offering at this price. Producers are not anxious to sell, and the market will doubtless go higher before many days.

**Spelter.**—This metal is considerably stronger, and sales made yesterday and to day average from 3.35¢ to 3.45¢. At the close to-day the latter price is the best that sellers will make. Several hundred tons have changed hands in the last two days, and the movement toward higher prices is now pretty well under way.

## Pittsburgh.

(By Mail.)

Office of The Iron Age, Hamilton Building,  
Pittsburgh, February 6, 1894.

The week under review has been an active one in the Steel market, and also in Wire Rods, Wire Nails and Barb Wire. Prices of the above products have not only firmed up considerably, but actual advances have occurred. When tonnage is considered it is safe to say that in Steel it has been larger thus far in February than in any one week during the last six months. There is no question but that the Iron and Steel trades are exhibiting signs of improvement all along the line, and buyers who are in position to anticipate wants for the next two or three months and fail to do so will run the risk of having to pay higher prices before long. The season for the opening up of spring trade is here; and with practically no stocks of goods on hand, and all indications pointing to an active building season this year, it is safe to assume that the demand for Iron and Steel of the various kinds will be considerably heavier this year than ever before. Money is abundant and goods are cheap and everything is favorable for such a demand. This being the case, it is not unfair to assume that when this demand comes, as it surely will, prices are bound to get better. We believe that, after careful investigation, buyers will bear us out in our assertions and will also conclude that there can be no risk in taking in goods at present prices, which are undoubtedly lower than they will be when we get back to normal consumption.

**Pig Iron.**—The improvement in the Steel market is being felt in the Bessemer Pig Iron market, and prices are considerably firmer to-day than one week ago. While it is true that there is a large amount of Pig Iron piled up, yet at the same time the active demand for Steel during the past week caused the Steel makers to believe that they will need the Iron for their own use before long, and they are not disposed to sell unless at a fair price. Another feature of the situation, and an important one, is that makers claim that they cannot afford to market Bessemer Pig at \$10.50 when prices of Ore for this year are considered. While \$10.75, Pittsburgh, for Bessemer might be slightly shaded, say 10¢ per ton, it is known that offers of \$10.50 made within the last few days have been refused. Gray Forge is in light demand,

and is held at \$9.75, Pittsburgh, although some of the city furnaces are refusing to sell at less than \$10, Pittsburgh. Foundry iron is in slightly better demand, and \$11 is now asked for No. 2, delivered. We quote as follows:

Neutral Gray Forge	.....	\$9.75 @ \$10.00 cash.
All-Ore Mill	.....	9.75 @ 10.00 "
No. 1 Foundry	.....	11.75 @ 12.00 "
No. 2 Foundry	.....	10.75 @ 11.00 "
Bessemer	.....	10.65 @ 10.75 "

We are advised of sales aggregating some 12,000 tons of Bessemer during the week at \$10.50 @ \$10.75, Pittsburgh. The sales at \$10.50 were made early last week, and it is doubtful if this price would be accepted to-day.

**Billets.**—One week ago the Steel market was dull at \$15.50 and less, while to day the market is firm at \$16 @ \$16.25, a sale of 1000 tons for Eastern shipment having been made here yesterday at the latter figure. As stated in this report several weeks ago, the Wire Nail and Barb Wire makers were loading up with business, and it was only a question of time when they would have to cover with Steel. When Steel got down to \$15.25 @ \$15.50 inquiries commenced to come in rapidly, and from being a buyers' market it has turned right around into a sellers' market. Early last week sales were made at \$15.50, and from this figure the price went up until \$16.25 had been reached, with Pittsburgh makers holding firm at \$16. It is estimated that from 30,000 to 40,000 tons of Steel changed hands in four or five days. One concern bought 10,000 tons, another 6000 tons, and numerous other lots ranging from 1000 to 5000 tons changed hands. Buyers are not relishing the turn the market has taken, as some of the larger concerns sold short and will be compelled to cover at prices considerably higher than were offered a week or ten days ago.

**Ferromanganese.**—While \$52 is asked for 80% domestic, it is stated that recent sales shaded this price. Buyers here incline to the belief that they should not be asked to pay the same price for material for Pittsburgh delivery that is ruling at tidewater, which is \$52 @ \$52.50.

**Plates.**—A slightly better feeling pervades the market, due to the increased inquiries and also to the improvement in Steel. Considerable tonnage is being received and it is thought prices are about as low as they can go, while some improvement in this direction is expected before long. For ordinary lots we quote as follows: Tank Steel, 1.25¢ @ 1.30¢; Shell, 1.40¢ @ 1.50¢; Flange, 1.50¢ @ 1.60¢; Ordinary Fire Box, 1.75¢; Railroad Fire Box, 2¢.

**Structural Material.**—While the greater part of the tonnage now coming in is for small lots, there is every reason to believe that some large orders will soon be placed. One large buyer is expected to ask bids on about 1200 tons of Shapes within a few days. Prices remain without material change and we quote as follows: Beams and Channels up to 15 inches, 1.25¢ @ 1.35¢, according to order; Angles and Universal Plates, 1.25¢ @ 1.30¢; Tees, 1.40¢ @ 1.50¢.

**Bars.**—This market is looking up a little, both in demand and prices. Buyers are placing orders for larger tonnage, which is taken to indicate that consumers believe prices have touched bottom and have already started on the road to recovery. The recent reduction in freight rates on west bound shipments has stimulated trade consid-

erably, as a great many orders were held back waiting for the reduction to be made. The fact that rates east bound have also been reduced, to go into effect on Monday, February 12, will doubtless still further improve the demand. We quote Steel Bars at 1.20¢ @ 1.25¢, some mills refusing to shade the latter figure. In the Valley Bars are held at 1.15¢ @ 1.20¢, half extras, and it would require an exceptional order to shade the lower figure.

**Merchant Steel.**—There is a little better inquiry, especially among Implement makers, but trade continues much lighter than it usually is at this season of the year. Prices are ruling about as follows: Bessemer Machinery, 1.40¢ @ 1.50¢; Open Hearth Machinery, 1.70¢ @ 1.75¢; Machine Straightened Tire, 1.60¢; Sleigh Shoe, 1.75¢ @ 1.85¢; Toe Calk, 1.90¢ @ 2¢; Open Hearth Spring, 1.85¢ @ 1.90¢; Tool Steel, 5½¢ and upward.

**Muck Bars.**—There is little inquiry for this product, and we quote nominally at \$19 50 @ \$20 50, according to grade, delivered at buyer's mill.

**Skelp Iron and Steel.**—Reports are going that an order for about 5500 tons of Grooved Iron Skelp was placed here last week. Prices of both Iron and Steel Skelp are showing a firmer tendency and we quote as follows: Grooved Steel Skelp, 1.05¢ @ 1.10¢; Sheared, 1.15¢ @ 1.20¢; Grooved Iron Skelp, 1.25¢ @ 1.30¢; Sheared Iron Skelp, 1.35¢ @ 1.40¢.

**Wire Rods.**—The Rod mills are full of orders, some concerns being sold up for the next three or four months. The four concerns in the Pittsburgh district making Rods are using their entire output with one exception, and this concern is sold up until May. One other large maker here has been buying Rods to cover sales of Wire Nails. The market may be quoted at \$24, and is firm at that figure, with none being offered for immediate shipment.

**Barb Wire.**—The demand for Barb Wire at this time is heavier than ever before in the history of the trade, and it is predicted that within the next two months or so there will be a decided scarcity of Wire for prompt shipment. This extraordinary demand, coupled with the advance in Steel, has stiffened up prices for Wire of all kinds and we now quote Four-Point Galvanized Wire at \$2 10 @ \$2 20 in carload lots, with some makers refusing to sell at less than our higher quotation. Painted Wire is also in good demand and is ruling at \$1.70 @ \$1.80 in carload lots. Plain Wire we quote at \$1.35 in carload lots and \$1.45 @ \$1.50 in less quantities.

**Wire Nails.**—The heavy demand ruling for some time past, together with the advance in Steel, has brought higher prices for Wire Nails and we now quote at \$1.10 @ \$1.15 in carload lots, the last named being the ruling figure. The demand shows no abatement and the outlook in this respect could hardly be better. Cut Nails are also looking up in demand and are held at \$1 @ \$1.05 in carload lots, at mill, some makers refusing to shade our higher quotation.

**Connellsville Coke.**—There is a slight improvement in inquiries for Furnace Coke, but prices continue as low as ever. For the week ending Saturday, January 27, there were 8465 ovens in the Connellsville region active, and 9048 ovens idle, the estimated production for the week being 82,011 tons. Compared with the previous week this

was an increase in active ovens of about 50, and in production of 7688 tons. Furnace Coke is still being offered at prices ranging from 90¢ to \$1 ½ ton. Foundry Coke is held at \$1 to dealers and \$1.15 to consumers, but on desirable business the latter quotation is shaded. Crushed Coke is held at \$1.40 to consumers, all in tons of 2000 lb, f.o.b. cars in region.

**Freight Rates.**—Taking effect on Monday, February 12, freight rates on articles of Iron and Steel manufacture from Pittsburgh and points in Pittsburgh territory on east bound shipments will be reduced from fourth and fifth to fifth and sixth classes. Under this reduction rates on Bar Iron from Pittsburgh to New York will be 15¢ in carload lots and 18¢ in less than carloads. To Philadelphia the rates will be 13¢ and 16¢, and to Baltimore 12¢ and 15¢, and to other points similar reductions will be made.

## Financial.

The replenishment of the Treasury reserve by the prompt taking up of Secretary Carlisle's \$50,000,000 bond issue last week exercised, on the whole, a favorable influence on the financial and business situation, although no startling advances in the direction of improvement can be recorded. The passage by the House, on Thursday last, of the Wilson tariff bill appears also to have relieved men's minds by removing at least a portion of the weight of uncertainty and apprehension that had been resting on them.

It was felt that any further alterations in the bill on its way through the Senate would be of a conservative character, and that, therefore, the utmost changes likely to be adopted are now known. With this assurance in view, the general desire of the business world is to see prompt action taken by the Senate in the matter. From their point of view, until the bill is actually through, and manufacturers and others interested in the tariff changes can know exactly where they stand, no material revival of business can take place.

Yet a gradual, though slow, improvement in business conditions continues in progress. Industrial recovery is presaged by the resumption of work by many idle plants, and a decrease in the number of mills and works suspending operations. The actual necessities of consumption have called for this resumption of activity, stocks of manufactured goods being at the lowest ebb throughout the country. The large majority of these resuming industries are, moreover, being run to fill orders actually on their books. The presence of more commercial paper on the market than has been seen since before the panic is a sign of reviving activity, although the vast amount of money lying idle in the banks gives proof that business is still more or less torpid, and that trade has not by any means regained its proper tone.

Railroad earnings for the month of January are calculated to show a decrease of 11.1 % from those of last year, but the proportion of loss showed a decreasing tendency for each week of the month, being but 8.6% for the fourth week. Several of the markets for manufactured goods show better results, notably iron and steel, textiles and dry goods. Yet staples remain on a low level. Wheat is lower in price than ever before, with

an enormous visible supply; corn is dull and weak, while cotton prices have declined in face of larger exports. American manufacturers, however, have been taking much less cotton than usual.

The Treasury lost \$15,000,000 during the month of January, or at the rate of \$500,000 a day. The official statement of the Government receipts and expenditures, issued this week, shows in round figures that the expenditures for the first seven months of the current fiscal year exceeded the receipts by \$46,000,000, the figures standing: Receipts, \$175,000,000; expenditures, \$221,000,000. These figures, if the ratio is carried through the entire fiscal year, would make the deficit for the year foot up \$80,000,000, leaving the Treasury with but \$41,000,000 of the \$121,000,000 with which it entered the fiscal year on July 1, 1893.

Of the new bond issue New York receives \$41,800,000, which has all been paid into the Sub-Treasury, two-thirds being in actual gold coin. This circumstance gives a more favorable appearance to the Washington Treasury statement. Saturday's bank statement did not reflect more than a portion of these subscriptions. It showed an average gain in cash by the Associated Banks of New York of \$3,600,000, and an increase in loans of \$759,000. The inflow of money from interior points appears to be diminishing in volume, in consequence of the interests on deposits having been materially reduced by many banks holding large balances belonging to out of town institutions. The statement showed the banks to hold \$111,623,000 surplus reserve, the largest ever known in New York.

The ease of the loan market continues. The market was unaffected, except for a moment, by the large subscriptions made by the city banks to the Carlisle loan. Call loans on stock collateral are made at rates ranging from ½ % to 1 %. Funds are offered in large volume, principally by private bankers. There has been a slight increase in the demand for time money, but rates have not advanced any, the offerings being still largely in excess of the demand. Rates are generally 2 % for 30 and 60 days, 2½ % for 90 days and four months, and 3 % @ 3½ % for longer periods. Mercantile paper shows rather more movement. Good lines placed on the market are readily absorbed, and the demand for best paper exceeds the supply. Rates are 3½ % @ 4 % for best indorsed receivables; 4 % @ 4½ % for best single names, and 4½ % @ 5½ % for other good paper. The new supply of paper coming into the market is mostly that of dry goods houses.

Speculation on the Stock Exchange has been of the dullest, and reached this week the lowest point seen in many years. The public still stand aloof, and leave the market to the professional traders, who have amused themselves during the past week in the manipulation of a few "industrials," which show more than half the total volume of dealings. The passage of the tariff bill on Thursday last had little or no effect on the stock market, the vote on that measure having, as usual, been fully discounted by Wall street. American Sugar and National Lead certificates were boomed toward the close of the week, and together with Chicago Gas and one or two railway issues showed a substantial advance. The market closed firm and dull on Saturday. Monday's and Tuesday's transactions on the exchange were relatively unimportant. The "industrials" reacted somewhat, Chicago Gas



in particular falling sharply on news of advantages having been gained in the Windy City by a rival company. Reading and Richmond Terminal shares both gained tone in the early part of this week on rumors of the approaching reorganization of those roads. The market was, on the whole, far less hopeful and steady at the close on Tuesday than it has been for some time. The following list shows the extreme fluctuations of a few of the more active stocks during the week, with closing prices on February 7:

	High- est.	Low- est.	Closing Feb. 7.
Am. Sugar Ref.....	82½	75½	79½
Balt. & Ohio.....	72	70	70
Chicago Gas.....	66½	62½	63
Chic., B. & Q.....	77½	75½	75½
Del. & Hudson.....	138	135½	136½
Del., Lack. & Western..	169½	165½	168½
Gen. Electric.....	35½	33½	34½
Louisville & Nashville..	46½	45½	45½
Missouri Pacific.....	24½	22½	22½
National Lead, Common.	30½	26½	28½
N. Y. & New England..	12½	11½	11½
Northern Pacific, Pfd..	18½	17	17½
Philadelphia & Reading..	21½	20	20½
St. Paul & Omaha.....	38	37	37
Union Pacific.....	18½	17½	17½
Western Union.....	84½	82½	82½

The bond market continues far more active than the stock market. There has been a much firmer tone, and many railway and other issues have made sharp advances on an increasing demand for good interest paying bonds for investment. Municipal bonds, too, have been in very active demand, and are quickly absorbed when placed on the market. Government bonds are strong—1½ higher for the twos and 1½ higher for the fours. The last sales on call were \$10,000 4s, registered, at 113½ and \$10,000 do. at 114. The closing quotations were as follows:

	Bid	Asked.
2's, 1891, registered.....	96½	—
4's, registered.....	113½	114½
4's, coupon.....	113½	114½
New 5's.....	117½	117½

Sterling exchange has been quiet and steady. The supply of bills is meager, and the demand from remitters not large. Actual business was done at 4.84½ @ 4.85 for 60 days, 4.86½ @ 4.87 for demand, 4.87 @ 4.87½ for cables and 4.84 for commercial.

Domestic exchange on New York is quoted as follows: New Orleans, commercial 50 premium, bank 100 premium; Charleston, buying par, selling ½ premium; San Francisco, sight 17½, telegraph 22½ premium; Savannah, buying par, selling ½ premium; Chicago, 40 premium.

Silver bullion in London sold down to 29½ pence ½ ounce on Wednesday, the lowest figure touched since the closing of the Indian mints last summer. The unsettled policy of the Indian Government in respect to the metal is attributed as the cause of its steady depreciation in price. Moreover, it is said that large amounts of silver purchased on speculation during the past few months have been forced on the Eastern markets; and rumors of an import duty being imposed on the metal by India have also been rife. More than \$3,000,000 of silver has already been shipped to India from England since the opening of 1894, and large shipments continue to be made to Europe from New York. Bar silver in New York fell to 64½¢ ½ ounce on Tuesday, with a further decline on Wednesday.

There is no further talk of gold exports, and the foreign trade balance begins to grow in our favor. Exports from New York continue somewhat larger than a year ago, while imports of foreign merchandise are still dwindling. Last week's imports were only \$7,000,-

000, just one-half of those in the same week of last year. Since January 1 exports compared with last year have been \$4,000,000 larger and imports \$27,000,-000 smaller.

## New York.

Office of *The Iron Age*, 95-102 Reade street, }  
New York, February 7, 1894.

**Pig Iron.**—Reports in the trade differ quite widely. Sellers of Southern Irons report a dull market, while agents of standard Northern brands note a better inquiry and report the placing of contracts for delivery up to the middle of the year. In some cases they have succeeded in marketing Iron very close to the furnaces in Northern New York. We quote standard brands \$13 @ \$13.50 for No. 1; \$12.50 @ \$13 for No. 2; \$11.75 @ \$12.50 for Gray Forge, at tidewater. Southern Iron, same delivery, \$13 @ \$13.50 for No. 1; \$11.75 @ \$12.50 for No. 2; \$11.50 @ \$12 for No. 3; \$11.50 @ \$11.75 for No. 2 Soft, and \$12 @ \$12.50 for No. 1 Soft. Gray Forge is \$10.75 @ \$11.25.

**Ferromanganese and Spiegeleisen.** No business is reported by importers. We quote domestic Ferromanganese \$52 @ \$52.50, tidewater, and foreign Spiegeleisen nominally \$21 @ \$22 for 10%, and \$24.50 @ \$25 for 20%.

**Billets and Rods.**—The demand has been a little more active, and some business has been put through. We quote \$18.50 @ \$18.75, tidewater, for domestic, and \$27 @ \$27.50 for foreign. Domestic Wire Rods are \$26.75 @ \$27, tidewater, while foreign remain nominally \$39 @ \$40.

**Steel Rails.**—The market is very dull so far as standard sections are concerned. Quotations remain \$24.80, tidewater. Girder Rails, for which there is more demand, are \$28 at mill. In light sections competition is lively.

**Track Material.**—We quote as follows for small lots: Spikes, 1.70¢ @ 1.90¢; Fish Plates, 1.35¢ @ 1.40¢; Track Bolts, Square Nuts, 2.10¢ @ 2.40¢, and Hexagon Nuts, 2.30¢ @ 2.50¢, delivered. Concessions would be made for round lots.

**Manufactured Iron and Steel.**—The most interesting event of the week is that orders have at last been given to go ahead with the work on the Park avenue improvement, which involves about 18,000 tons of material. The Elmira Bridge Company have two sections of the contract and the New Jersey Steel & Iron Company one-third. The Plates have almost all been placed with the Pittsburgh mills, the Carbon Steel Company having by far the greatest part, while the bulk of the Angles will be rolled by the Pennsylvania Steel Company. In Architectural work it is to be noted that the Hearn Building goes to an Eastern Pennsylvania mill, while the Syracuse job went to Pittsburgh. Lower quotations have been made on Beams by a Pittsburgh mill than ever before, none of the others following. An order for about 150 tons Tank Plates has brought out very low offers. Common Bars are selling in this market at 1.25¢, the low quotation noted in our last being denied by sellers. We quote nominally: Beams up to 15-inch, 1.50¢ @ 1.75¢; 20-inch, 1.75¢ @ 2¢; 24-inch, 2¢ @ 2.25¢, for round lots; Angles, 1.40¢ @ 1.60¢; Universal Mill Plates, 1.40¢ @ 1.65¢; Tees, 1.70¢ @ 2¢; Channels, 1.50¢ @ 2¢, on dock. Steel Plates are 1.35¢ @ 1.55¢ for Tank; 1.55¢ @ 1.65¢ for Shell; 1.75¢ @ 2¢ for Flange, and 2¢ @ 2.50¢ for Fire

Box, on dock; Refined Bars are 1.40¢ @ 1.9¢, on dock, and Common 1.25¢ @ 1.30¢; Soft Steel Bars are 1.30¢ @ 1.50¢; Scrap Axles are quotable at 1.5¢ @ 1.60¢, delivered; Steel Axles, 1.5¢ @ 1.60¢, and Links and Pins, 1.5¢ @ 1.70¢; Steel Hoops, 1.50¢ @ 1.70¢, delivered; Cotton Ties, 70¢ @ 72½¢ @ 45 lb bundle, at mill; Machinery Steel, 1.45¢ @ 1.50¢; Toe Calk, 1.90¢ @ 2¢, and Sleigh Shoe, 1.65¢ @ 1.75¢, delivered.

**Old Material.**—Old Steel Rails are being offered freely at \$9 @ \$9.50, and Old Iron Rails at \$11.75 @ \$12.

**Stock Warrants.**—The American Pig Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard December 31, 1893....	85,700
Put in yard for 31 days ending January 31, 1894.....	3,800
Total.....	89,500
Withdrawn 31 days ending January 31, 1894.....	1,400
Net stock in yard January 31, 1894..	88,100

Frank S. Froment, 446 West street, announces that the Iron and Steel business carried on by him during the last 14 years will be managed by him for the account of L. B. Froment, trading as Froment & Co.

## Metal Market.

**Pig Tin.**—Prices for Straits Tin have averaged somewhat lower and the market has remained in somewhat dormant condition. Neither consumers nor jobbers have purchased except in a very perfunctory way and in the speculative arena little has been done aside from making "official" quotations. Some sales have been made privately at about 19.85¢, net cash, for prompt and near future delivery. Jobbing parcels went at corresponding prices, or, say, at about 20¢ from store. Those figures fairly reflect market value at this writing and the inside rate is very close to the cost of importation. Dealings in futures are still restrained more or less by the uncertainties surrounding the Wilson tariff measure, and poor condition of general trade also has a certain degree of unfavorable bearing, sentimentally at least. The statistical position is given as follows in the Metal Exchange circular.

	Janu- ary. Tons.	De- cem- ber. Tons.	No- vem- ber. Tons.
Shipments:			
Straits to Great Brit- ain.....	2,050	2,900	1,950
Straits to Continent..	1,100	925	750
Straits to United States	430	300	200
Total.....	3,580	4,125	2,900
Australia to Great Britain.....	330	450	480
Australia to United States.....	50	None	100
Total.....	380	450	580
London to United States	360	180	240
Holland to United States	None	None	None
Total.....	360	180	240
Consumption—			
London deliveries....	1,770	1,480	1,670
Holland deliveries....	790	695	1,080
United States, excl. Pacific Coast.....	900	910	1,600
Total.....	3,460	3,075	4,350
Stocks—			
London.....	6,547	5,210	4,750
Holland.....	2,080	1,555	1,715
United States, excl. Pacific Coast.....	1,710	1,980	2,470
Total at close of month.....	10,337	8,745	8,935
Afloat—			
For London.....	3,671	4,490	3,283
Holland.....	2,260	2,150	1,560
United States, excl. Pacific Coast.....	1,190	1,005	745
Total at close of month.....	7,121	7,645	5,588



## Visible Supply—

	1894.	1893.
February 1.....	17,458	16,300
January 1.....	16,399	14,014
	1893.	1892.
December 1.....	14,523	15,175

**Copper.**—Several sales have been made of Lake Superior Ingot at 9½¢ for prompt and near future delivery. About 50,000 pounds were involved. There are offers now at 9¼¢ by sales agents of some producers and at a shade less from second hands. Naturally the pronounced weakness in this class of the metal has had a depressing influence upon values of other varieties, forcing Electrolytic down to 9¼¢ and ordinary casting stock to 9¼¢ where other than ordinary small jobbing parcels may be involved. Business at the lower level of prices involved no large or important quantities and the demand has not improved in any marked degree. Still the sales seem to have been somewhat larger the past week than during the one preceding.

**Pig Lead.**—There has been a further advance in prices. Single carload lots of common Western are sold at 3.35¢ and holders are now asking 3.40¢ upward. Only routine business has been done at the advance, however, and the demand is extremely commonplace at the present time, with hardly any interest shown except in moderate quantities for near future delivery, outside of a speculative circle in which a considerable amount of Lead is supposed to be held.

**Spelter.**—Late good purchases at primal points, along with more or less curtailment of production, have had sufficient force to carry a shade higher and impart greater firmness to the tone of the market. Thus far sales have not been made other than choice brands at above 3.65¢ here or at common point, but sellers are now generally asking 3.70¢ upward, and offer very reservedly. Very few will take orders at that price for delivery prior to April 1.

**Antimony.**—Except of jobbing parcels, there has been but little movement, and prices are only steady at 9½¢ @ 9¼¢ for Hallett's, 10¼¢ @ 10½¢ for Cookson's, and corresponding prices for other brands.

**Tin Plate.**—Dealings in futures have been spasmodic and the amount of stock involved seems to be considerably below the average for this season of the year. Spot stock has also met with somewhat irregular sale. In prices there have been few and only moderate changes, but the market still shows rather weak tone. For spot goods the following prices are quoted: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., \$5.35; Bessemer full weight, \$5.25; light weights, \$4.82½ @ \$4.85 for 100 lb, \$4.77½ @ \$4.80 for 95 lb, \$4.60 for 90 lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.45; Siemens Steel, IC basis, \$5.55 @ \$5.60; IX basis, \$6.60. Charcoals—Melyn grade, IC, \$6.35; Crosses, \$7.87½; Allaway grade, IC, \$5.50; Crosses, \$6.65; Grange grade, IC, \$5.60; Crosses, \$6.75. Charcoal Terns—Worcester, 14 x 20, scarce; do., 20 x 28, \$11.35; M. F., 14 x 20, \$7.25; do., 20 x 28, \$14.50; Dean grade, 14 x 20, \$5.35; do., 20 x 28, \$10.50 @ \$10.60; D. R. D. grade, 14 x 20, \$5.15; do., 20 x 28, \$9.90 @ \$10; Alyn, 14 x 20, \$5.35; do., 20 x 28, \$10.50; Wasters—S. T. P. grade, 14 x 20, \$4.75; do., 20 x 28, \$9; Abercarne grade, 14 x 20, \$4.60; do., 20 x 28, scarce.

## British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, February 31, 1894.

The market for Pig Tin has been flat and prices have undergone little change, although showing rather weak undertone. At times there were signs of pressure to sell spots on the part of speculative holders and dealers. On the other hand, more interest seems to have been taken in futures occasionally, but broad or general movement was restricted by the decline in the price of silver. Leading operators are withholding support, with a view to keeping prices as low as possible while Chinese merchants liquidate their stocks. It is asserted that large purchases have been made in the primary market for London account at prices relatively higher than those that have ruled latterly in the English market, and that recent heavy arrivals in London have been absorbed. At the close the market was quiet, with Straits quoted at £70. 12/6 for prompt delivery, and £71. 7/6 @ £71. 10/ for three months' futures.

Copper prices have averaged somewhat lower, and the market has been dull, adverse advices from America and further realizing by holders offset the fact that the statistical position at the beginning of the month was better than expected. At present speculators are shy, owing to want of confidence, while free offerings from America cause consumers to hold back for lower prices. Spot stocks increased 61 tons the last fortnight, and the European visible supply decreased 471 tons. Chili charters were 550 tons. Sales of Furnace Material have been very limited, smelters' views on prices being too low. Late sales were at £41. 2/ for Merchant Bar prompts, £41. 12/6 for futures, and £44. 10/ for Best Selected English.

Business in Tin Plate has been moderate. Inquiries for Oil sizes were fair, but the prices offered were invariably low and restricted sales. For other sorts the demand has not improved. Liverpool prices are quoted as follows:

IC Charcoal, Alloway grade.....12/3 @ 12/9  
IC Bessemer Steel, Coke finish.....11/ @ ....  
IC Siemens.....11/3 @ ....  
IC Coke, B. V. grade, 14 x 20.....11/ @ ....  
Charcoal Terne, Dean grade.....10/6 @ ....

Pig Lead business has been moderate and the market is without new feature. At the close £9. 2/6 was quoted for ordinary Spanish.

Spelter prices have ruled somewhat lower and the market is rather flat, with £15. 17/6 quoted for ordinary Silesian.

There has been no improvement whatever in the Iron or Steel trades, and the speculative markets, lacking stimulus, are somewhat lower. Latest transactions in the latter were at 43/4 @ 43/5 for Scotch, 35/6 @ 35/7½ for Cleveland and 45/6 for Hematite.

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# HARDWARE.

## Condition of Trade.

**T**RADE continues to improve, which is a natural result of the advance of the season and the necessary preparations for spring business. Manufacturers and merchants are soliciting orders earnestly, and a force of travelers perhaps nearly as large as usual is on the road. The result is a volume of business of fair proportions. Most of the orders for general goods are comparatively small, dealers sorting up carefully and awaiting the setting in of an active demand from their customers before buying with old time liberality. In some lines of goods, notably Wire Nails and Barb Wire, there is an improved tone in prices and an excellent demand. The trade on the whole are taking a much more cheerful view of things than for a long time past.

### Chicago.

(*By Telegraph.*)

The volume of business transacted by Shelf Hardware jobbers is steadily increasing and prospects are regarded as considerably better than they were at the beginning of the year. The demand is, however, still running more largely to staple goods than to straight Hardware. Country merchants realize more strongly that Wire Nails and Barb Wire are a good purchase at the existing prices at this time of the year and do not hesitate to take in good stocks. This has brought about an unusual demand, which swells the value of business now current. The demand for seasonable goods has been met for the time, as the field has been pretty well covered now by the salesmen of the several houses. Orders for straight Hardware are confined to small lots for sorting up and will probably not increase to any considerable extent until the time comes for an actual demand from consumers when the building season opens. Heavy Hardware jobbers report a better volume of trade in Iron and Steel, but no special increase in other departments.

### St. Louis.

(*By Telegraph.*)

There is something of a falling off in the demand for shelf goods. Retailers report a backward trade, which is more or less influenced by the changeable weather prevailing in this locality during the past week or ten days. The Southern trade will open up in about two weeks, and a heavy demand is expected in that section. The trade in

Manila Rope is heavy, but some low prices are being made. Barb Wire is firmer in consequence of the agreement of the manufacturers to advance this commodity 15 cents per hundred-weight. Wire Nails are unchanged. Tin Plate is in fair demand, but prices in this, as in other lines, are shaded to secure orders. Galvanized Iron and Iron Roofing are having a spurt which should continue from now on. Collections are only fair.

## Notes on Prices.

**Wire Nails.**—There continues to be an excellent demand from both wholesale and retail houses, and as a result the mills are well occupied on orders. While there has been no quotable change in prices, the tone of the market, in sympathy with the advances which have taken place in the raw material, is stronger, a fact which has also the influence of stimulating orders from careful buyers who are watching the market closely. The market is represented by quotations ranging from \$1.10 to \$1, the latter figure being exceptional and given regularly only on large and attractive orders. The New York market is represented by the quotation of \$1.20 on dock, with small lots from store at \$1.25 to \$1.30.

*Chicago, by Telegraph.*—The manufacturers of Wire Nails report a continued strong demand from all classes of buyers. One sale of 50,000 kegs is reported as showing the confidence which large buyers have in the stability of existing commercial conditions. The mills are now so well filled with orders that the makers are apparently in command of the situation. Jobbers who bought what they thought they needed about two weeks ago are now trying to duplicate their orders or otherwise enlarge them and attempting to secure the old rate, in which they are not meeting with much success. Merchants are ready to buy for April delivery, but manufacturers are disinclined to take orders so far ahead with the advance now going on in Steel Billets and Wire. Manufacturers' quotations are, in the majority of cases, about \$1.20, Chicago, and the few who are below this are expected to advance their rates in the next few days. Small lots from stock are selling at \$1.20 to \$1.25, but these low rates will have to be withdrawn if the heavy demand continues for any length of time.

**Cut Nails.**—The Cut Nail market continues in substantially the same condition as described in our last report. There is an increase in the volume of

business and prices remain steady at former quotations. The Western market is represented by the quotation of \$1 to \$1.05 at mill. The Eastern Cut Nail manufacturers quote \$1.05 for carload lots on dock, New York, and are adhering strictly to their agreement to discontinue quoting Nails at factory and are naming only prices for Nails delivered.

*Chicago, by Telegraph.*—The Cut Steel Nail trade has not experienced the movement shown in Wire Nails, and yet there has been a steadily improving demand with some orders of good size placed during the past week. Manufacturers are quoting factory lots on the basis of \$1.05, Chicago, on a 60-cent average. Jobbers report only a small local demand, and are quoting from stock at \$1.15 to \$1.20.

**Barb Wire.**—As the result of the conferences which have been held by the manufacturers, and the active demand of the past few weeks, the Barb Wire market is in a perceptibly improved condition, and is characterized by a stronger tone. There is not, however, as yet entire uniformity in the quotations made by different manufacturers, some of whom are holding Galvanized Four Point at \$2 15, while others have not as yet announced the withdrawal of recent quotations.

*Chicago, by Telegraph.*—The manufacturers of Barb Wire held a meeting in this city on Monday, at which the situation was thoroughly canvassed and the fact brought out that very heavy orders had been booked by all the factories. Taking into consideration the improvement in the demand and the advance in Billets and Wire Rods, an effort is to be made to advance prices on Galvanized Barb Wire to \$2.15 at Pittsburgh and Cleveland, and \$2.25, Chicago, as the bottom rate for largest lots. Jobbers report a much better demand from their customers and state that the country merchants are sending their orders in by mail instead of waiting for the salesmen to call for them. Prices for small lots have been inclined to weakness at \$2.30, but the change in the attitude of manufacturers will evidently have a strengthening tendency.

**Steel Set Screws, &c.**—Under date February 1, Reynolds & Co., New Haven, Conn., issue a new list on Steel Set Screws, which is 25 per cent. higher than the list on Iron Set Screws, instead of 50 per cent. higher as heretofore. Other Steel Screws, such as Square Cap Screws, Hexagon Cap Screws, &c., the price on which has

heretofore been 50 per cent. higher than for corresponding Iron Screws, will hereafter be also furnished at 25 per cent. advance. The discount on these goods remains as before, but it is announced that on purchases of Set Screws, Square and Hexagon Head Cap Screws, Milled Studs and Coupling Bolts aggregating \$500 during the six months ending July 1 or January 1 a rebate of 5 per cent. will be allowed, and provided such purchases amount to \$1000 or upward during the same period a rebate of 10 per cent. will be allowed. It is also stated that dealers' full discounts and privileges will be allowed to any and all Hardware supply houses in good standing irrespective of whether they carry a stock of these goods or not.

**Shot.**—The price of Shot has again declined, a further reduction being announced by the manufacturers under date of February 5. The marked decline which has occurred within the past few weeks is owing in part to the low prices ruling on lead, but there is also an unusually active competition among the manufacturers. Following are the present prices, terms 30 days, or 2 per cent. discount for cash in ten days from date of invoice :

	Per bag.
Drop Shot, sizes smaller than B, 25 pound bags.....	\$1.20
Drop Shot, sizes smaller than B, 5-pound bags.....	.35
Drop Shot, B and larger sizes, 25-pound bags.....	1.45
Drop Shot, B and larger sizes, 5-pound bags.....	.40
Buck and Chilled Shot, 25-pound bags.....	1.45
" " " 5-pound.....	.40
Dust Shot, 25-pound bags.....	2.00
" " " 5-pound.....	.45

In lots of 2000 pounds and upward taken at one time a discount of 5 cents per bag (25 pounds) will be allowed, together with a special discount of 2½ per cent.

**Traps.**—Oneida Community, Kenwood, N. Y., announce revised discounts on their line of Traps as follows:

	Discount per cent.
Newhouse.....	50 and 10
Hawley & Norton.....	75 and 5½
Victor.....	75 and 10 and 5
All Steel.....	80
Star.....	60 and 10

**Ames' Shovels and Spades.**—Under date February 1 Oliver Ames & Sons' Corporation, North Easton, Mass., announce a discount of 20 per cent. on all their goods, except the following:

Reed & Lindsay, list Nos. 548 to 572.  
Lee & Hadwin, 838 to 880.  
Hadwin Drain and Ditching Spades, Nos. 1004, 1009, 1014, 1019, 1024, 1027 and 1029,

and on these goods they will allow a discount of 27½ per cent. They will also allow an extra discount of 10 per cent. to all parties whose net purchases from them exceed \$500 for six months. In addition to the above named discounts they will allow at the close of the season, July 1, 1894, a further discount of 5 per cent. to all parties whose net purchases from them exceed \$750 during said term. This extra discount

is not to be deducted before the expiration of the six months, and is to be forfeited by all parties who have sold their goods at greater discounts than first named. Freight is prepaid to Boston and New York, and all goods are at risk of purchaser after shipment from factory.

**Tacks.**—The Atlas Tack Corporation are issuing, under date January 24, a revised discount sheet on Hardware list goods, and also a revised Shoe Finders' list. The prices thus announced represent the market on this line of goods, other manufacturers making the same prices. The revised discounts on Hardware list goods, "straight weights," are as follows, which are subject to an additional 3¾ per cent., and 2 per cent. for cash:

*Goods, Papered, Dozened and M's.*

	Per cent.
American Carpet Tacks, Blued.....	60
" " " Tinned and Cop- pered.....	65
Steel Carpet Tacks, Bright and Blued.....	60
" " " Tinned and Cop- pered.....	65
Swedes Iron Carpet Tacks, S. S., Blued.....	65
" " " Tinned.....	70
" " " Lanc., Blued.....	50
" " " Tinned.....	55
American Cut Tacks, domestic.....	55
" " " foreign.....	50
Swedes Iron Tacks, S. S., Blued.....	55
" " " Tinned.....	60
" " " Lanc., Blued.....	50
" " " Tinned.....	55
Swedes Iron Upholsterers' Tacks, S. S.....	60
" " " Lanc.....	50
Gimp Tacks, S. S., Blued.....	55
" " " Tinned.....	60
" " " Lanc., Blued.....	50
" " " Tinned.....	55
Trimmers' Tacks, Lanc.....	45
" " " S. S.....	50
Hungarian Nails.....	50
Common and Patent Brads.....	50
Leathered Tacks.....	5
Brush Tacks and Nails, S. S.....	25
" " " Lanc.....	20
Looking Glass Tacks.....	15
Picture Frame Points.....	25
Lace Tacks.....	45
" " " Tinned.....	50

*Pounds, Pound or Half Pound Papers  
or Bulk.*

	Per cent.
Swedes Iron Tacks, Lanc., Blued.....	50
" " " Tinned.....	55
" " " S. S., Blued.....	55
" " " Tinned.....	60
Gimp Tacks, Lanc., Blued.....	50
" " " Tinned.....	55
" " " S. S., Blued.....	55
" " " Tinned.....	60
Light Basket Tacks.....	45
Regular.....	50
Steel Carpet Tacks, Blued.....	60
" " " Tinned or Coppered.....	65
American Cut " Bulk, domestic.....	55
" " " foreign.....	50
Swedes Iron Upholsterers' Tacks, S. S.....	60
" " " Lanc.....	50
Trunk Tacks, S. S.....	60
" " " Lanc.....	50
Finishing Nails.....	55
Trunk and Clout Nails, Black.....	60
" " " Tinned or Coppered.....	65
Hungarian Nails.....	50
Basket.....	50
Chair.....	50
Cigar Box.....	40
American Carpet Tacks, Blued.....	60
" " " Coppered or Tinned.....	65
Swedes " S. S., Blued.....	65
" " " Coppered or Tinned.....	70
" " " Lanc., Blued.....	50
" " " Tinned.....	55
Railroad and Bill Posters' Tacks, S. S.....	55
" " " Lanc.....	50
Leathered Tacks.....	5

The discounts named above are for Straight weight goods, but an extra 5 per cent. is announced on Star weights,

an extra 10 and 5 per cent. on Standard weights, and an extra 10 and 10 per cent. on Special weights. On the back of the discount sheet a schedule of the above weights is given.

**Chain and Wagon Hardware.**—The Baker Chain & Wagon Iron Mfg. Company, Allegheny, Pa., are issuing revised quotations on their line of Wagon Hardware, Chain, Washers and other specialties in Agricultural Hardware. The prices thus announced have been carefully revised and are in a number of instances somewhat lower than those which have prevailed.

**Rowlocks.**—The Columbian Rowlocks, manufactured by Newhall Ship Chandlery Company, 105 Chambers street, New York, and illustrated in *The Iron Age*, February 1, 1894, are sold at the following net prices per pair:

<i>Regular, Complete.</i>					
Nos.	0	1	2	3	4
Cast.....	\$0.07	\$0.08	\$0.12	\$0.18	\$0.35
Malleable.....	.09	.12	.18	.25	.40

<i>Side Plate, Complete.</i>				
	<b>Nos.</b>	<b>0</b>	<b>1</b>	<b>2</b>
Cast.....		\$0.09	\$0.12	\$0.18
Malleable ... ..		.12	.18	.22

**Elbows and Shoes.**—W. Austin Obdyke & Co. Philadelphia, and Lamb & Ritchie, Cambridgeport, Mass., announce that in order to simplify and adjust prices, after February 1, 1894, their list prices for Corrugated Expanding Elbows and Shoes will be as follows, replacing all previous lists. The list is subject as before to a discount of 60 per cent.:

<i>Round.</i>		
	Elbows.	Shoes.
2-inch, each.....	\$0.25	\$0.30
3 " ".....	.30	.36
4 " ".....	.40	.48
5 " ".....	.50	.60
6 " ".....	.60	.72

<i>Square.</i>		
2-inch, each.....	\$0.30	\$0.40
3 " ".....	.36	.48
4 " ".....	.48	.60
5 " ".....	.60	.72
6 " ".....	.72	.84

In each of the above classes there is now but one price for each size.

**Wire Specialties.**—The Acme Wire Letter Rack and Eureka Copy Book Holder, manufactured by the Cincinnati Mfg. Company, Cincinnati, Ohio, and illustrated in *The Iron Age*, January 25, 1894, are sold at net prices as follows:  
Acme Letter Rack, per dozen.....\$2.00  
Eureka Copy Book Holder, each......75

**Glass.**—The demand for Glass is slow and prices are unsatisfactory. No changes of importance have taken place in the Glass market since our review of last week, and prices named at that time fairly represent present quotations. The market is weaker rather than stronger than a week ago, jobbers and manufacturers each making prices to suit the requirements of the case. It is reported that the idea of closing all factories February 10 has been abandoned, and it is understood that at present prices sufficient money can be realized on the Glass manufactured to meet current expenses.

## Bicycles in the Jobbing Trade.

**B**ICYCLES having become a recognized adjunct to the Hardware trade have found their way into many of the large jobbing houses. This is especially the case in the West, although they are being handled largely in the East and South. The line carried usually includes high grade machines, also those of moderate prices, to meet the requirements of a large range of purchasers. There is some diversity of opinion among wholesale houses as to the advisability of including this line, and some who have tried the experiment have not been altogether satisfied with the results. The favorable terms made by some manufacturers directly with the retail trade are referred to, as interfering to some extent with the placing of Bicycles by the wholesale houses, and this, no doubt, has some bearing upon the decision arrived at by the jobbers who now look with disfavor upon the line. Others, however, have pushed this department to success, and are preparing for a larger business during the coming season than ever before, while others still are handling the goods this year for the first time. We refer below briefly to the lines of wheels carried by some leading houses:

**SIMMONS HARDWARE COMPANY**, St. Louis, Mo., will handle the following machines for the coming season: Lyndhurst Cycles, Eagle Altair aluminum rims, Zimmerman, Westminster and Western. The line of Lyndhurst includes special racer, 18½ pounds; regular racer, 21 pounds; light roadster, 25 pounds; regular light roadster, 28 pounds; full roadster, 32 pounds, and Lady Lyndhurst. The wheels will be fitted with wood rims. The special features of the Eagle Altair are cold swaged frame, equipment on light weights, aluminum rims. The weights are 21, 25, 30 and 32 pounds. The Zimmerman is made for them by Syracuse Cycle Company (E. C. Stearns, president), Syracuse, N. Y., and includes all advantages and improvements found in most high grades, and in addition several peculiar to this machine only. The weights are 21, 24 and 28 pounds. The Westminster and Western are machines made for the company exclusively, and possess all the advantages of any makes of like grades. The company give the following points on the different machines named: On high grade they have three machines which possess advantages peculiar to themselves, advantages which they consider all high grade machines should possess over others to make them strictly high grade. It has not been with them, in making the selection of these machines, a matter so much of price as of quality. They have, it is stated, selected such as are made of the best material and the finest workmanship. On medium grades they remark that they have a line on which they will have practically no competition.

**A. F. SHAPLEIGH HARDWARE COMPANY**, St. Louis, Mo., have added Bicycles to their already large line of goods, and will handle the Syracuse Cycle Company's wheels for their high grade machines during the season of 1894. Their catalogue shows the Syracuse Racer, weighing 24 pounds, listing \$150; Syracuse Special, weighing 26 to 29 pounds, listing \$135;

Syracuse Model C, weighing 32 pounds, listing \$125; Syracuse Model B, weighing 33 pounds, listing \$100; Syracuse Model A, weighing 32 pounds, listing \$100; and the Syracuse ladies' pattern, the Thelma, in two grades; \$100 grade, weighing 30 pounds, and the \$150 grade, weighing 26 pounds. The Racer is referred to as having every ounce of extra weight scientifically trimmed off without affecting the strength of the machine, and as being made of the best possible material throughout. The Special is designed for advanced riders as a light, speedy wheel for scorching, and is also adapted to road service by careful riders. Model C is for general road use. Model B is made, it is stated, on accurate mechanical principles; straight lines, proper proportions, correct angles, &c., with Humber pattern frame of cold drawn seamless steel tubing. Model A is similar to Model B with exception of handle bar and brake. The Thelma is referred to as a high grade ladies' wheel in every particular. For medium grade wheels at moderate prices the following are shown: Templar, weighing 39 pounds all on, 33 pounds stripped, listing \$75; Atalanta, weighing all on, 41 pounds, listing \$75; Red Cloud, weighing all on, 36 pounds, listing \$50; White Wings, weighing 37 pounds, listing \$50; and the Whistler, weighing 33 pounds, listing \$40. Bicycle bells, lamps, repair outfits, Bicycle pumps, Bicycle stands, tires, &c., are also shown in their catalogue.

## Simonds Mfg. Company's Chicago Plant.

**T**O FACILITATE the handling of their increasing business in the West the Simonds Mfg. Company, Fitchburg, Mass., commenced the erection of a factory at Chicago in the summer of 1892, but only had it completed and in fairly good running order for the latter part of last spring's business. The plant is now, however, in first-class running shape, and we take pleasure in giving below some information concerning its dimensions, arrangement, appointments, &c.

The works are located on Western avenue, between Sixteenth and Seventeenth streets. This locality is about 3 miles from the Chicago City Hall, and possesses exceptionally good freight facilities. The Pan Handle, Baltimore & Ohio and Belt railroads pass in the rear of the factory, and the Chicago, Burlington & Quincy is at right angles with these roads one block from the factory. There is also a suburban service of from 30 to 40 trains a day, by which the plant can be reached in from 12 to 15 minutes from the Union Depot.

The buildings are all of red brick and consist of a Saw factory about 250 feet long, 50 feet wide, with an engine and boiler room 38 x 60 feet adjoining. The Knife factory is 125 feet long and 44 feet wide. All of these buildings have a basement under them of about 8 feet clear, which is used for storage and other purposes. The one-story buildings have iron trussed roofs, with no posts in the rooms. The two-story building is fully equipped with sprinklers. The buildings are arranged with extra large windows, which provide excellent light for the work rooms. At the rear end of the factory the company have a side track where all their raw material is received. The toothing room is on the first floor of the Saw factory and this is where the manufacture of the Saws begins. Here the plates are drilled and the toothing of the Saws is done.

There is also other machinery for dressing up the teeth, and large punches for cutting out the holes in the different classes of work. Passing directly into the next room, which is the Saw hardening room, and is separated by a fire wall and iron doors, we come to the hardening furnaces, where the Saws are hardened. These are very thoroughly and nicely constructed. We next come to the several tempering ovens, which are used for tempering the different sizes of Saws. These are located conveniently to the hardening furnace and are of the company's own invention. At the late World's Fair some of their special awards were given to them on this department. All the heating in this department is done with oil. From here we pass another fire wall and iron doors, when we come to the Saw grinding room. Here they have four circular grinding machines, which are all new and which possess the latest improvements. A thing peculiar to this room is that the water and grit from the stones drop through into a pit running the whole length of the grinding room. This pit is about 10 feet wide and has a gradual slope from one end to the other, so that the water and mud flow down to one end and can be removed with but little trouble, thus saving a great deal of dirt around the grinding room. The grinding machines are all constructed of iron and steel and have a large capacity. Next come the polishing frames for polishing all this class of work. There are four of these, all with large iron plates and frames throughout. Adjoining this room is the shipping room, where all the goods are packed for shipment, and next to it the factory office. The office is connected by telephone with the city office, so that the two places are in close touch with one another. Above the grinding and shipping rooms are the Band Saw department, machine room, carpenters' shop and stock rooms, where a large stock of both wide and narrow Band Saws, Circular Saws, &c., is kept. In the machine room are a large number of new lathes, planers and drills, and in the wood working department adjoining are several saw benches for the manufacture of cases, patterns, &c. Directly in the rear of the Saw shop and parallel to it is the Knife department. This is entirely separate from the Saw department. Here there is a blacksmith shop and tempering room, 60 feet long and 44 wide, and separating this room from the grinding room, 65 feet long and 44 feet wide, is a brick partition. In the latter room the knife grinding and polishing is done. The grindstone pit in this room is arranged like the one in the Saw department and the bearings for the stones are supported by cast iron frames reaching across the pit. The stones are very large ones, weighing about 3 tons each, and are run with 10-inch belts connected with the main line in the basement. These belts are made endless and never have to be laced, a tightening frame being used to take up the length of the belt when the pulleys are changed, as the stone wears down in use, and it becomes necessary to put on smaller pulleys. The pulleys on the main line are friction pulleys, so that the stones can be started and stopped easily at any time. In the rear of the grindstones are the polishing frames and the necessary straightening appliances and racks for patterns, there being quite an original and systematic way of handling the patterns. There is a track running into this room from the yard next to the railroad, on which all the stones that are consumed in this department are brought in. It will be noticed from this description that the raw material is received from cars on

the side track, and that the finished product comes out at the other end of the Saw and Knife department.

In going through these works one sees that everything is of the most substantial character. The machinery is nearly all new, there being but two or three pieces which were used at the old factory on Halstead street. The company have placed in their new plant the very latest tools, and their Saw and Knife factory is certainly a model one. At the time they moved from their Halstead street factory they also moved their city office, which is now at 21 South Canal street. This is in the very heart of the machinery district of the city of Chicago. Here is carried a large stock of Knives and the smaller Saws. The store is newly fitted up throughout. It is 20 feet front and 150 feet deep. In it are arranged in the most complete manner cases for all of their different lines of goods, and in the rear part of the store is a packing room and storeroom for goods that are in transit and that are to be shipped from the office.

### A Hardware Fire Brigade.

**WYETH HARDWARE & MFG. COMPANY**, St. Joseph, Mo., have a well drilled fire brigade composed of their employees. At a recent emergency drill the alarm gong was sounded at 10.30, from the fifth floor of the building, and instantly every employee was in active motion, every one by his actions indicating he had some special and well defined duty to perform. In exactly 20 seconds from the last sound of the alarm every man was at his post prepared with the most efficient weapons to fight fire and fight it to win. As the alarm was sounded from the top floor two extra runs of hose had been carried from the second floor to the fifth, and axe men, Babcock extinguisher men, hose men and captains was each at his post. No questions, no wild cries of alarm, no confusion; simply prompt performance of a duty thoroughly understood by every man, all in 20 seconds.

The most efficient fire department will admit that this is good work, shows good drill and an intelligent comprehension of the requirements of such a service. Huston Wyeth, the organizer and vice-president of the company, feels a very proper pride in his fire brigade and is to be congratulated on its efficiency.

The brigade consists of three hose men, two Babcock extinguisher men, one axe man and captain for each floor, well supplied with the most modern and efficient fire apparatus.

### Massachusetts Hardware Dealers' Association.

**THE ANNUAL MEETING** of the Massachusetts Hardware Dealers' Association will be held at Boston on Wednesday next, February 14. The business session will be of more than usual interest, as several matters of importance will come before the meeting, and a full attendance of the members is desired. The annual dinner, which will be graced by the presence of the ladies, will be in the evening, and an attractive programme is being arranged.

### Clark & Parsons Co.

**ANNOUNCEMENT** is made of the formation of the Clark & Parsons Company, East Wilton, Maine, who have been incorporated for the purpose of continuing the business of manufacturing the Lightning and Blizzard Hay Knives and other implements formerly made by the Hiram Holt Company, whom they have succeeded, with the same plant, stock, trade-marks, good will, &c., and with increased facilities. It is stated that this is practically not a new company, but the old concern rejuvenated, attention being called to the fact that the management remains the same, the treasurer and manager of the company, Arthur D. Parsons, having for many years been connected with the Hiram Holt Company in the same capacity, and retaining with him the services of the skilled workmen so long employed by the old firm. No change will be made in the labels as used on Hay Knives by the Hiram Holt Company, and all goods will be guaranteed. Franklin J. Clark is the president of the new company.

### Trade Items.

**A. W. DODD & CO.**, Gloucester, Mass., manufacturers of Dodd's Liquid Glue, whose factory was burned some time ago, have rebuilt and are now prepared to supply the Glue in handsome packages suitable for the Hardware trade.

**THE NEW YORK OFFICE** of Geo. N. Pierce & Co., Buffalo, N. Y., in charge of S. J. Thompson as manager, has been removed from Warren street to 107 Chambers street, where some handsome samples of the company's manufactures are on exhibition.

**THE PLANT** of the Bailey Auger Bit Company, Harriman, Tenn., which has been in receiver's hands for the past seven months, has been sold. The purchasers will at once organize a new company under the name of the Southern Auger Bit Works, and expect to begin operating the factory about March 1.

**THE CONNECTICUT CASKET HARDWARE COMPANY**, New Britain, Conn., have sold their machinery, stock, designs, patents, &c., pertaining to the manufacture of Casket Hardware to the New Britain Hardware Mfg. Company, who with increased capital and facilities will carry on the business of manufacturing the Invisible Pin Casket Handle and other fine Casket Mountings.

**THE ARMSTRONG MFG. COMPANY**, Bridgeport, Conn., manufacturers of Water, Gas and Steam Fitters' Tools, have removed their New York offices from 242 Canal street to the Cornell Building, 139 Centre street, where a full line of their goods will be displayed. The new offices are well suited for the large business done by this concern and conveniently located for buyers.

**THE ANNUAL MEETING** of the New York Retail Implement Dealers' Association will be held at the new Osborne House, Rochester, N. Y., Thursday, February 8, at 2 p.m. The organization was formed last year and is composed of retail dealers from various parts of the State. The present officers are: H. H. Brown, Spencerport, president; W. R. Wilson, York, vice-president; H. E. Wheeler, East Bloomfield, secretary.

**CAVANAUGH & THOMPSON**, dealers in Wooden Ware, &c., formerly at 130

Reade street, New York, are now across the street from the old stand at 131 Reade street. They refer to their trade as being 50 per cent. greater in volume at the present time than for the corresponding period a year ago. W. R. Thompson of this firm is now in Florida, soliciting orders for goods in their line, and will work his way North through the larger cities on the Atlantic seaboard. It will be remembered that this concern were burned out several months ago.

**ON JANUARY 1, 1894**, the copartnership composed of Albert R. Pritchard, John M. Milne (Charles D. Milne) and Millard F. Robeson, doing business under the style of the Rochester Stamping Works, Rochester, N. Y., was dissolved by mutual consent, the interest of John M. Milne (Charles D. Milne) being purchased by Millard F. Robeson. On the same date a new partnership was formed between Albert R. Pritchard, Millard F. Robeson and George W. Robeson, who will continue the business under the former style. They will pay all debts and collect all bills incurred by or owing to the Rochester Stamping Works.

**HAVING PURCHASED** the stock and good will of Way & Co., wholesale and retail dealers in Hardware, Hartford and Willimantic, Conn., the business will be continued by the Way Hardware Company, a corporation organized under the laws of the State of Connecticut. The management will be the same as heretofore.

**HENRY C. SQUIRES & SON**, importers and dealers in Arms, Ammunition and athletic and sporting goods, have leased the large and commodious premises at 20 Cortlandt street, New York, near Broadway, and will be fully installed in their new quarters shortly. At present they are doing business both at the above address and at their old stand around the corner at 178 Broadway. The new store has been fitted up with shelving, drawers, cupboards, show-cases, &c., in light wood, and the facilities for conveniently doing business have been very much enlarged. The whole establishment is lighted by electricity.

**IN THEIR ADVERTISEMENT** in this issue the Sun Mfg. Company, Greenfield, Ohio, call the attention of the trade to their Improved Sun No. 10 Cash Register, an illustration of which is given. The moderate cost of this Register is one of the points of which special mention is made.

**S. TOOMEY & Co.**, Canal Dover, Ohio, manufacturers of the Toomey Sulkies, have placed their entire order for their season's supply of metal wheels with the Sterling Cycle Works, Chicago, Ill. After experimenting for a year they have selected the Sterling, which they are confident will give them the best satisfaction. The corrugated hub, direct piano wire spokes and special hollow rim are the features of the Sterling wheels.

**J. W. SHEFFIELD C. A. Huntington**, Frank Sheffield, C. A. Huntington, Jr., and John Sheffield of Americus, Ga., have applied for a charter to incorporate themselves under the name of the Sheffield-Huntington Company, with a capital stock, paid in, of \$50,000. The above corporation will succeed the Hardware firm of J. W. Sheffield & Co. on April 1. The management will remain the same as heretofore.

**C. T. HAM MFG. COMPANY** of Rochester, N. Y., manufacturers of Tubular and Railroad Lamps and Lanterns, have opened an office in room 911 Masonic Temple, Chicago, which will be in charge of M. H. Kiebel, resident salesman. A full line of samples will be carried in this office for the inspection



of the trade in that section. The company announce that there will be some improvements in their line for 1894.

THE ADVERTISEMENT of the Clark Mfg. Company, Buffalo, N. Y., is deserving attention, illustrating, as it does, some of the many patterns of Blind Hinges which they are putting on the market. It also calls attention to other goods which they are making, such as Lull & Porter O. S. Shutter Hinges, both mortise and surface, Clark's mortise Blind Hinges, Buffalo Noiseless and Empire Reversible surface Blind Hinges, loose pin Door Butts, Sash Pulleys, &c.

BEMIS & CALL HARDWARE AND TOOL COMPANY, Springfield, Mass., are now prepared to furnish 18-inch Combination Wrenches in both long and short nut. They advise us that heretofore 15-inch has been the largest size in which they have made the Wrenches.

WM. H. GRIFFITH has connected himself with Charles J. Healy of 106 Chambers street, and will be in position to present to his friends in the trade an attractive line of foreign Pocket Cutlery, American Table Cutlery, and French, German and English novelties.

W. H. BRIGGS & SON, Valdosta, Ga., are manufacturers of Turpentine Tools and supplies instead of agents for these goods, as inadvertently stated in our issue of January 25, 1894. They advise us that great care is taken to sustain the reputation which their Hacks, Pullers, Scrapers, Shovedowns and other tools have attained. These goods may also be obtained from J. P. Williams & Co., Savannah, and from the Downing Company, Brunswick, Ga., who are agents for the manufacturers.

### Bicycle Notes.

**M**ONARCH CYCLE COMPANY, 42-52 North Halsted street, Chicago, advise us that only two years ago their output was less than 1000 wheels, while last season they built and sold nearly 5000, and are now turning out 250 machines a week, expecting to build for this season's business from 6000 to 8000 machines. They refer to the satisfaction given by the Monarch Bicycles wherever introduced, and call special attention to their Monarch Special, 1894 pattern. This machine weighs 25 pounds, fitted with wood rims and Palmer tires; wheels, 28 inches; head, 9 inches; wheel base, 43 inches, and high frame. The prices on Monarch Bicycles range from \$90 to \$125. Their advertisement relating to their machines will be of interest to those contemplating the handling of Bicycles.

THE S. A. HAINES COMPANY, Indianapolis, Ind.: High grade Bicycles. Their catalogue shows Model A, listing \$125, and Model B, listing \$100. The wheels are fitted with Rex or Morgan & Wright cemented tire; or with the Cyclone Clincher tire, of which an illustrated description is given. The manufacturers state that the machines combine all points of excellence in lines, material and workmanship, and that they are handsome, durable and light.

THE "YELLOW FELLOW," E. C. Stearns & Co.'s spokesman of February 1, 1894, discusses the financial situation from a Bicycle manufacturer's standpoint, and finds encouragement in the outlook. It is conceded that the difference of \$25 in the cost of machines is likely to shift the affections of riders from one wheel to another, but that a good influence can be exerted by getting the best riders of the wheel most popular in the community to express

their preferences so far as to induce their friends to purchase the wheel the proprietor is pushing. Those intending handling wheels are urged to put samples on exhibition, and the suggestion is made that machines in a lighted window at midnight will find the merchant customers. A Stearns Model B, listing \$125, is illustrated as a wheel for riders to whom a few pounds more of weight cut no figure. It weighs with brake 32 pounds, or stripped 31 pounds. An adjustable handle bar is also shown, so arranged that by slipping a clasp to one side the bar may be turned to the desired position. Every Stearns Special is equipped with one. Reference is made to the advance circular issued by the company as a forerunner of their annual catalogue, giving a sufficient description of the Stearns line of wheels for 1894 in a form that can be carried in the pocket.

THE ECLIPSE BICYCLE COMPANY, Indianapolis, Ind., and Beaver Falls, Pa., are offering for the coming season a line of wheels as follows: Eclipse Model A, weighing stripped 26 pounds, with wood rims 25 pounds, listing \$125; ladies' Eclipse, weighing 30 pounds, listing \$125; Eclipse Model

B, weighing stripped 30 pounds, listing \$100; Eclipse Model C, ladies', listing \$100; Eclipse Model D, ladies', listing \$85, and Eclipse Model E, listing \$85 in 28-inch wheel, and \$75 in 26-inch wheel. The company place upon the market this year their Eclipse pneumatic tire, having an inner tube and double valve. This is a mechanically fastened tire, designed to give comfort, durability and ease of repair.

H. C. MARTIN & Co., Buffalo, N. Y., have arranged to give a Bicycle exhibit at Buffalo, beginning February 19, and continuing one week. Martin's Church will be used for this purpose, and will be handsomely decorated, with music and expert riding every evening. There will be 11 spaces, in which the following will be exhibited: The Martin Special, Columbia, Rambler, Warwick, Buffalo, Syracuse, Envoy, Fleetwing, Falcon and Falconess Bicycles and Bicycle sundries. Buffalo people who could not attend the New York or Philadelphia shows will have an opportunity of seeing a Bicycle exhibit which promises to be up to date in every particular, and agents of the company and others interested can here select their line for 1894.

## Prize Competition No. 28.

CLOSING FEBRUARY 17, 1894.

### Subject: Bicycles in the Retail Hardware Store.

In this competition the sale of Bicycle accessories, such as Lamps, Bells, Tools, Tool Bags, Pumps, Lubricators, &c., is included in connection with Bicycles.

There is an evident tendency toward a largely increased sale of Bicycles through the Hardware trade, and this competition is announced for the purpose of obtaining suggestions as to the methods by which this line of business can most successfully be carried on by the retail Hardware merchant.

Those discussing the subject are free to treat it as they think best, but the following points are suggested as deserving attention:

- The feasibility and desirability of selling Bicycles and Bicycle Supplies in the retail Hardware store;
- The difficulties in the way and how they may be overcome;
- The extent of the assortment which the Hardwareman should carry;
- Whether he should confine himself to one line of Wheels;
- The best methods of stimulating the sale of these goods; and
- Whether it is necessary or desirable to have a repair department and how it may best be conducted.

The following prizes will be awarded:

First Prize,	-	-	-	\$25.00.
Second Prize,	-	-	-	15.00.
Third Prize,	-	-	-	10.00.

This subject is open to all.

In its discussion it is desirable that reference to particular manufacturers or machines be omitted.

We shall have the privilege of publishing any of the contributions received.

Contributions are to be received not later than February 17, 1894. They should be addressed as follows:

DAVID WILLIAMS,

96-102 Reade Street,

Prize Competition No. 28.

New York.



by customers outside of the city. Everything used in the retail depart-

tionery, car fare, tacks, &c., an exception being made, however, in the case

The arrangement of the main floor can be seen in Fig. 810, the wholesale

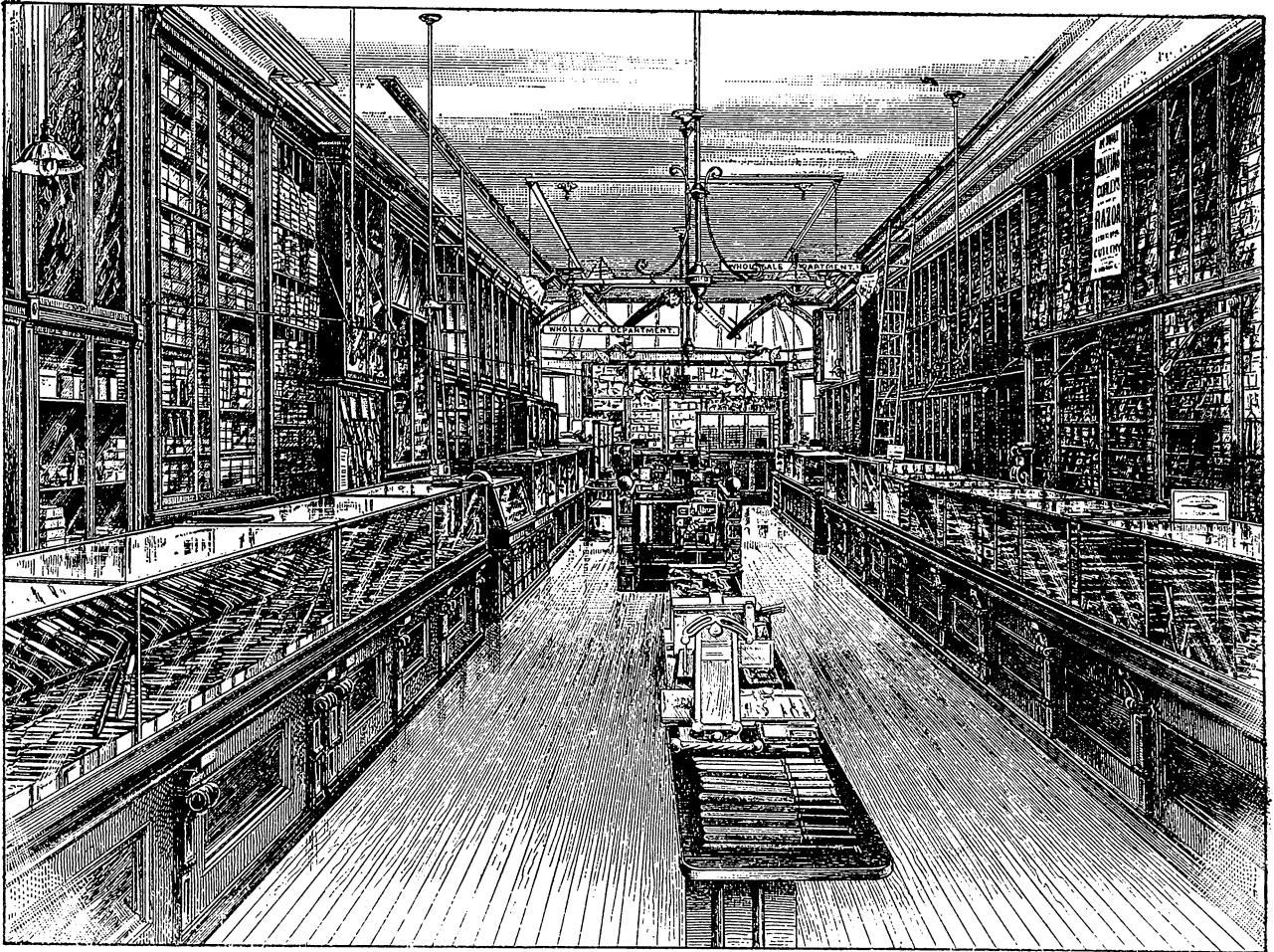


Fig. 811.—General View of J. Curley & Brother's Store.

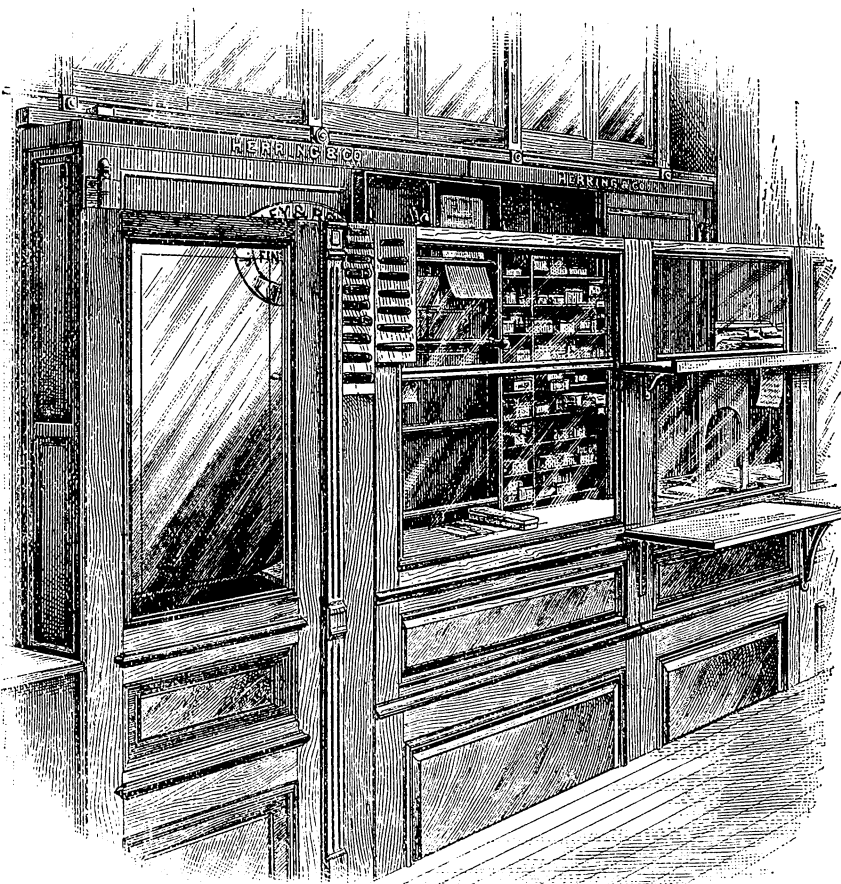


Fig. 814.—Safes for Fine Pocket Cutlery.

ments is charged to them by the whole-sale department, including stock, sta-

of postage stamps, which is only a small item.

department occupying the rear portion of the room. The counters on both sides are covered with showcases and the goods upon the shelves are protected by glass doors, which slide up and down. The business has reached a point where no expense is considered too great by which the appearance of the stock or the facilities for doing business can be improved. The protection of goods from dust and the keeping of everything in order cannot fail to impress customers with the idea that each article is considered valuable. The appearance of the room upon entering the store is seen in Fig. 811. The wood work and showcases are of light wood, in natural finish, and the store is lighted by gas and electricity. The shelving extends to the ceiling and each side is provided with trolley ladders. Additional artificial light is provided on the right hand side of the store through flexible electrical fixtures, which can be bent out of the way to allow the ladder to pass. Switches are provided so that the body of the store, the side lights and either of the show windows can be lighted by electricity independent of each other.

Four mammoth electric lights provide light for the main body of the store, and are placed in a line in the center of the room, suspended from the ceiling. The arrangement of the lights is such that the space from front to rear is divided into equal parts.



The metal parts of the lamps are nicked, and the large ground glass globes diffuse a soft, mellow light.

An enlarged view of a portion of the retail Pocket Cutlery department may be seen in Fig. 812. The arrangement of the knives in the shelving and show-cases is such that Knives of the same class are kept together—that is, two blade jacks, three blade pockets, &c.

Great attention has been given to the selling of Pocket Knives and to the placing of a Knife before the cus-

wants a two, three or four blade Knife a sufficient variety should be shown to satisfy him, but not enough to confuse him in selecting. The idea is to please customers and make them feel at home, not to hurry them, but to let them examine the Knives to their satisfaction, and restrain any feelings of impatience, even if they do breathe on the blades or handle the Knives excessively. Sell that which has merit and that which will be serviceable and give the best satisfaction. The require-

sample case of cook and butcher Knives. In front of the general office are large safes, in which fine Cutlery is kept, as shown in Fig. 814. In front of the safes is a glass partition with a shelf at the back. This partition allows goods to be taken from the safes to fill orders and to be placed on the shelf without fear of their being stolen. While this is not evident to the customer, care is taken throughout the store that no temptation be placed in the way of unscrupulous persons.



Fig. 813.—Elevator from Basement.

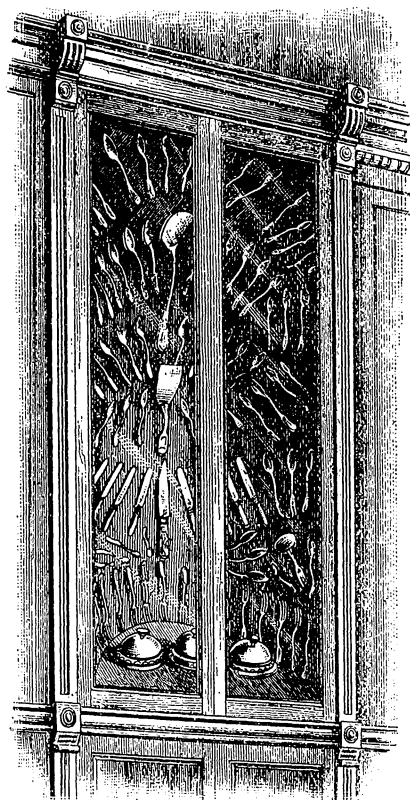


Fig. 815.—Samples of Flat Ware.

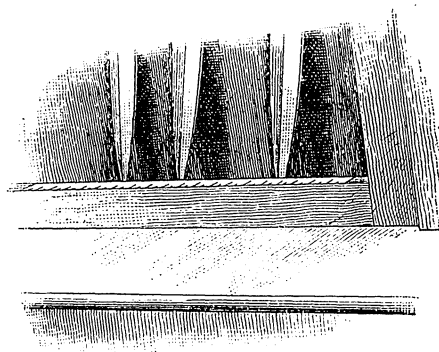


Fig. 816.—Measure for Shears.

tomers in the most attractive manner. The following ideas and suggestions are based upon the plan followed:

Mats are provided on which to show Knives, as the glass will scratch the more expensive handles, especially tortoise shell. A Knife should always be opened by the salesman before laying it down for the inspection of the customer, with the longer blades fully opened and the shorter blades half way open. This not only saves time but shows the Knife in the best proportion, which would not be the case if the shorter blades were fully opened and the long blades only partly open. After inquiring whether a customer

wants a two, three or four blade Knife a sufficient variety should be shown to satisfy him, but not enough to confuse him in selecting. A poor man wanting a cheap Knife may not want to pay more than 50 or 75 cents, while a rich man would consider a Knife which suited him cheap at \$1.50 or \$2. Cards calling attention to special goods are found on the showcases; also goods which are marked at special prices, which for any reason it is desirable to clear out.

Fig. 813 shows the elevator from the basement and sub-basement, which is located part way back on the left side of the store. This is used for sending stock up to the first floor. Above it is a

The sample case shown in Fig. 815 has a concaved back, lined with black material, upon which are sampled silver plated Spoons, Knives and Forks. In the arrangement of the stock care is taken to have goods of the same kind near together, to have all goods plainly marked and everything necessary to complete a sale close at hand. An instance of this care taking is seen in Fig. 816, where a tape measure is fastened at the bottom of the Shear case, thus avoiding running around the store hunting for a rule with which to measure the length of Shears. It is believed to be annoying to a customer to have a clerk

unable to find at once such goods as may be called for or not to be able to tell the price immediately. As a result there is no confusion and no calling across the store for information from other clerks. Every clerk is expected to sell goods in any of the retail departments, and must be familiar with the goods and with their arrangement.

A Knife is considered a good one if it has a keen edge, works easily and will sharpen a lead pencil satis-

stretched. Samples are fastened to the cork as shown.

The manner of treating the samples shown on the pillars, one of which are in each show window, is more fully illustrated in Fig. 818. The different classes of cutlery require different kinds of treatment to show them to the best advantage. The blades of Pocket Knives can, of course, be stuck in the cork, while Cork Screws and Razors have to be hung upon small nails or pins.

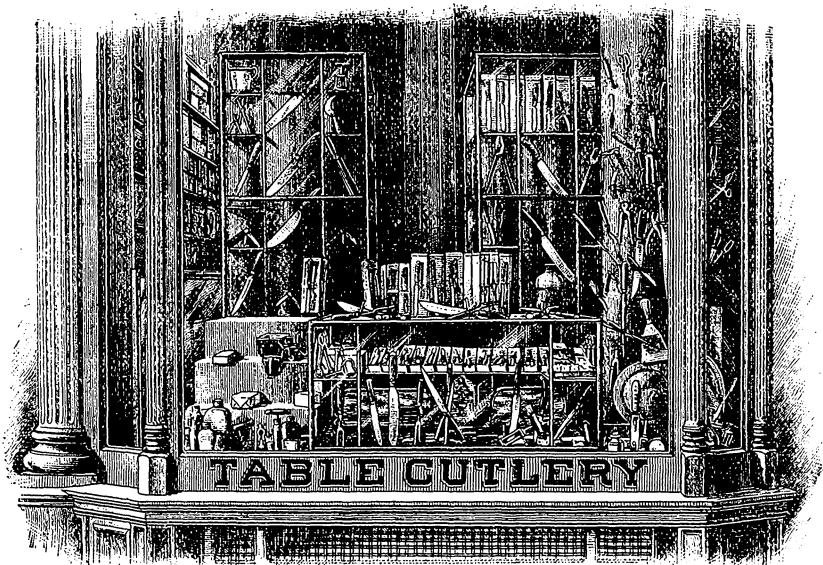


Fig. 817.—Arrangement of Show Window.

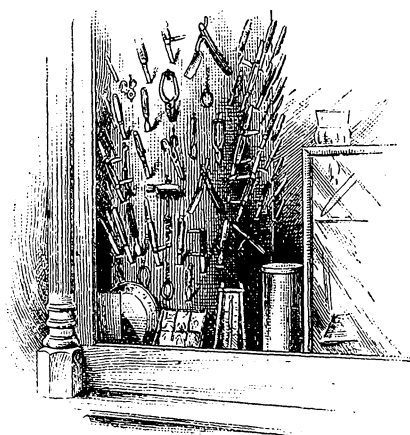


Fig. 818.—Enlarged View of Pillar.

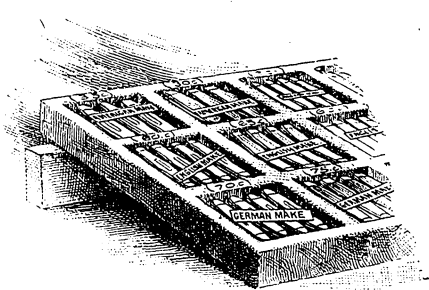


Fig. 819.—Pocket Cutlery Display by Nations.

factorily. If a manufacturer cannot sharpen a Knife it is doubtful if any individual can. Sunken joints, highly polished blades, brass lining and expensive handles of course add to the cost of a Knife.

The attention which is given to the display of goods is a marked feature in this store. As will be seen from the floor plan the show windows are of generous proportions, allowing some goods to be shown in cases. An idea of the arrangement of one of the windows may be had from Fig. 817. All the space is utilized to the best advantage, even the pillar in the corner of the window. This is covered first with sheets of cork, over which cloth is

In the show window to the right of the entrance is a shallow box, divided into compartments covered with suitable dark material. This box or tray, shown in 819, is devoted to exhibiting pocket cutlery, allowing a comparison to be made by the prospective customer of Knives of American, English and German make, the prices at which each is sold being also given. The three or four Knives in each compartment are of the same pattern. These show windows are a constant source of attraction to passers by and add much to the annual amount of sales.

The proprietor's desk is at the left of the entrance, where customers can

be pleasantly greeted as they enter the store and a clerk can be summoned to attend to their wants if none is at hand. A well pleased customer is considered by the firm as the best advertisement.

## Price-Lists, Circulars, &c.

**W**ITHINGTON & COOLEY MFG. COMPANY, Jackson, Mich.: Wheelbarrows. Illustrations are shown of Sweatt's Barrel Tray; Queen B. Barrow, with Sweatt's Tray; the Jackson Bolted Barrow; Railroad extra brace Barrow; Jackson Rover Barrow; W. & C. Salt Barrow; bent handle Stone Barrow, and Hubbard's patent steel Wheel. The manufacturers state that they carry a large stock of these goods and can fill orders promptly.

**FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.:** Children's Carriages. A 30-page catalogue illustrates Children's Carriages in a variety of styles and prices, also Pocket Cutlery, Guns, Sporting Goods, Locks and fine Builders' Hardware, &c.

**CHADBORN & COLDWELL MFG. COMPANY, Newburg, N. Y.:** Lawn Mowers. A trade circular is devoted to their line of Mowers, including the New Model, New Model High Wheel, O K, Rival, Excelsior Roller and Excelsior Horse. A separate circular refers to the awards received by the company at the Columbian Exposition.

**THE PHILADELPHIA LAWN MOWER COMPANY** (successors to Graham, Passmore & Co.) of 3107 and 3109 Chestnut street, Philadelphia: Catalogue of their Lawn Mowers. It is in pamphlet form and shows the Philadelphia Lawn Mower in all styles. Space is also accorded the Philadelphia Lawn Sweeper, made by the same concern.

**PAGE BELTING COMPANY, 91 Liberty street, New York,** issue a calendar calling attention to their Columbian Exposition awards. An illustration is given of their 72 and 71 inch three-ply Belts, as used on the Allis engine at the fair.

**SUTTON BROS. & BELL, Indiana, Pa.:** Catalogue No. 5. The book is devoted to Stump Machines, Heating Stoves, Upright Engines, Bob Sleds, Cesspool Traps, Cart and Mill Hooks, Farm Bells, Oven Doors, Hitching Weights, Flue Collars, Road Scrapers, Sugar Kettles, Tire Benders, Mandrels, Tuyeres, Land Rollers, Plows, Lawn Vases, &c.

**WELLS & COUTAN COMPANY, New York:** Steam Whistles. A circular announces that the company are now making a full line of single bell chime Steam Whistles, of which illustrations are given, without valve, with upright valve and with side valve.

**THOS. L. WAYNE MFG. COMPANY, Cincinnati, Ohio:** Furniture Trimmings in metal. The catalogue of 52 pages is devoted to brass and bronze Hardware of every description, including bronze Hardware, brass Furniture Trimmings, brass Fire Sets and Fenders, brass Screen work and Rails, Refrigerator and Bar Trimmings, &c.

**EARLE & SCRANTON COMPANY, Detroit, Mich.:** Hardware specialties. The catalogue is devoted to Scythes, Lawn Mowers, Corn Hooks, Band Knives, Hay Rakes, Corn Planter, Seed Sowers, Oil Cans, Feed Cutters, Axes, Hay Knives, Washing Machines, Screen Doors, Window Screens, Farming and Garden Tools, &c.

**THE DAVENPORT CUTLERY COMPANY, Davenport, Iowa:** Scissors and Shears. Illustrations and prices are given of Nickerson's Patent Bolt Straight Trim-



mers, Bent Trimmers, Left Hand Straight Trimmers, Bankers' or Paper Shears, Barber Shears, Ladies' Scissors, Pocket Scissors, Double Point Button Hole Cutter and Tailor Shears.

CINCINNATI MFG. COMPANY, Cincinnati, Ohio: Brushes and Wire Goods. Illustrations with prices are given of Brushes in great variety, Cages, Flour Sifters, Fly Traps, Dish Covers, Grate Guards, Mail Rack, Copy Holder, Screws, Iron Cresting and Fencing, &c.

THE CLEVELAND SUPPLY COMPANY, Cleveland, Ohio: Hose and Sundries. A pocket size Hose and specialty book for season of '94 contains illustrations of a variety of goods in this line, with list prices of same.

PARRY MFG. COMPANY, Indianapolis, Ind.: Parry Indianapolis Buggies. Illustrations are given of Buggies, Surries, Carriages, Road Wagons, Road Carts, &c. These goods are shown in a variety of styles and finishes.

PRIESTLEY EXPRESS WAGON & SLEIGH COMPANY, Grand Rapids, Mich.: Horace F. Sise, 114 Chambers street, New York. Combination Step and Extension Ladders, three-pieced Extension Ladders, Grand Rapids adjustable Window Screens, children's Express Wagons, Hand Sleighs, &c.

TROY NICKEL WORKS, Troy, N. Y.: Alaska Stove Trimmings. Illustrations are given in their catalogue and price-list of Fire Sets, Shovels, Pokers, Stove Lid Lifters, Tack Hammers, Bail Handles, Stove Knobs and Keys, Oven Door Handles, Stove Ornaments, Hinge Pins, Turn Keys, &c.

GRAND RAPIDS REFRIGERATOR COMPANY, Grand Rapids, Mich.: Cold facts regarding the Leonard Cleanable Refrigerators. A small catalogue and spring circular is devoted to these goods, giving illustrations of Refrigerators, Sideboards, &c.; also, detailed views of mode of circulation, ice rack, shelves, lock, &c. A complete telegraphic code is included near the back of the book.

GIBBS MFG. COMPANY, Canton, Ohio: 1894 Reminder. A pamphlet for the jobbing trade illustrates Lawn Rakes in many styles, Nozzle Holder, Arc Lawn Sprinkler, Hustler Lawn Sprinkler, Magnetic Curry Comb and Post Hole Diggers in a variety of styles. The manufacturers state that they present the finest lines, perfect in construction, with full guarantee.

## The Chapman Mfg. Company's Catalogue.

THE CHAPMAN MFG. COMPANY, Meriden, Conn., have just issued a handsomely illustrated catalogue and price-list of Dog Collars and general dog furnishings. The catalogue is about  $10\frac{1}{2} \times 7\frac{1}{2}$  inches in size, bound in paper covers, the front one being handsomely illustrated in colors. The 88 pages of the work are fully illustrated, showing a large variety of Collars; also Pug Harness, Dog Name Plates, Dog Collar Padlocks, Bells, Whips, Leaders, Combs and Brushes, Chain Leaders, Kennel Chains, Muzzles, display stand for Dog Collars, Tennis Belts, &c. Some of the finer grades of Collars are illustrated in colors. The manufacturers call attention to the change in numbers; also to the style classification, which is so arranged as to avoid trouble in ordering from the catalogue. Many new and attractive designs have been added to their stock.

## The Co-Insurance Clause.

MANY OF OUR READERS are familiar with the annoyance and uncertainty in the matter of fire insurance which results from the insertion in their policies of the co-insurance clause. In this connection the following communication from A. W. Parmelee, president of the Wire Goods Company, Worcester, Mass., is deserving of careful attention:

Hardware Boards of Trade throughout the country, as well as individual manufacturers and merchants, should promptly investigate the co-insurance clause on fire policies. Within a year the companies have taken to tacking a rider or slip on to all manufacturers' and merchants' policies, saying that unless the insurance is 80 per cent. of the value of the property insured, the policyholder becomes a co-insurer with the companies.

To more quickly and clearly illustrate what this means I may be excused for giving a personal case. I was interested in a small factory in Springfield, Mass., valued at say, \$45,000. We were carrying \$30,000 insurance, which has always been considered a fair proportion. As our policies were renewed during the past year the agents quietly tacked on this co-insurance clause. We suddenly had a disastrous fire, which was a total loss, in the sense that everything we had was damaged more or less. We took a careful and laborious inventory, and, after allowing for all the salvage that could be hoped for, we found that our net loss was \$30,000. In due time a dozen expert adjusters gathered at Springfield and inspected our ruins for, say, 20 minutes. They then took our inventory and adjourned to a hotel, where they remained in secret session for something over two days. They then allowed us to enter and announced that they would offer us in settlement \$10,000. They showed no figures or scrap of paper, but merely made this offer. I could not find that the facts, or the law, or the co-insurance clause even, had anything to do with the case. All that I could discover was that after secret consideration they offered us \$10,000. This led to a wrangle which lasted for, say, six weeks, at the end of which time we were thoroughly tired out. We were under \$200 per day fixed charges, and the delay was eating us up, and we finally took whatever they would give us.

It appears that we bought and paid for \$30,000 worth of insurance, but they only offered us \$10,000; in other words, we paid for 300 per cent. more insurance than we had, and hence our insurance costs us 300 per cent. more than it appeared to cost. The companies claimed that when they tacked that rider on to our policies it became a contract binding us to insure 80 per cent. of our total value on penalty of being subjected to such a settlement as the above. They explained that they took our money for insurance, but that we carried our risk ourselves. The regular tariff of insurance rates has recently been marked up from 50 to 100 per cent. in this vicinity. The co-

insurance clause on top of this is a burden too great for business men to bear.

No man can tell what is 80 per cent. of his value. In times of inflation his plant has one value, in times of depression it has quite another value. Probably no case will ever occur in which the insurer actually hits 80 per cent. of his value. If he overinsures his reputation is likely to be destroyed. Constantly varying stocks would make it impossible to keep within the 80 per cent. rule. Once outside the rule he becomes the victim of the co-insurance clause, and the adjusters are the sole interpreters of the law and the facts.

It will be evident to all business men that while the cost for insurance is thus advanced to an enormous rate the quality of the insurance has depreciated in the same ratio. It is insurance that does not insure, and one who suffers a loss and believes he is protected will find instead that he has a ticket in a raffle. I have made a careful study of our own situation, and I find that while we are insured for a very large amount the operation of this clause would, in the event of a disastrous fire, cut us down in the same alarming proportion as the case above. I also find that it is absolutely impossible for us to insure an amount which I am certain will be 80 per cent. of our value. Under the enormous cost of this kind of insurance no business would stand the expense attached to absolutely safe insurance. The clause is manifestly intended to catch every policy holder and to land him outside the dead line.

It is the duty of manufacturers and merchants to protest against this unjust device and to call upon underwriters to withdraw it, and to take such steps as shall compel them to give us what we pay for. If we only insure part of our value we certainly carry the balance of the risk ourselves. Under no system of ethics can they sell us \$30,000 worth of insurance and then show us that we only have \$10,000 worth. Aside from the iniquity and cunning of the device and the disrepute into which it brings insurance and insurance methods there are other objections to it on moral grounds. It is a premium on dishonesty. It compels overinsurance, and overinsurance leads to incendiary fires. The agents have a new lever with which to earn commissions, and, in my opinion, the effect will be disastrous upon the companies themselves. However, the public are sustaining a burden which they cannot afford to carry.

Will your readers investigate this subject and give it ventilation, so that the underwriters shall be compelled to withdraw this unpopular clause?

## It Is Reported—

That the Leadville Hardware Company, Leadville, Col., have been incorporated. They are capitalized at \$25,000. The members of the company are Ex-Mayor J. E. Foutz of Leadville and J. P. Fleming and W. H. Evans of Red Cliff.

That W. B. Travis' Hardware store, at Whitehall, N. Y., was damaged by fire on the 26th ult.

That F. V. Sparr's Hardware store, at Cromwell, Iowa, was robbed on the 19th ult. The burglars blew off the safe door, but secured only about \$20.

That L. N. Wood & Bro.'s Hardware store, at Linwood, Pa., was robbed on the 19th ult.

That E. Brusen, Hardware merchant, Vicksburg, Minn., has disposed of his business.

That the Gates Hardware Company, Springfield, Mo., have been incorpo-

rated. The capital stock is \$10,000, half of which has been paid in. The company will deal in Hardware, and will also manufacture Tinware and Sheet Metal. T. E. Gates, A. J. Eismayer, J. F. Gates, F. X. Heer and W. H. Horine comprise the company.

That A. J. Swoffer has succeeded Harwood & Swoffer in the Hardware business at Walnut Grove, Minn.

That J. C. Cloppert of the Hardware firm of Cloppert & Binkley, Brookville, Ohio, has sold his interest in the business to Mr. Binkley.

That Chas. H. Shaw has been taken into partnership in the Hardware business of his father, George W. Shaw, Zanesville, Ohio.

That Henry Pasker will open a new Hardware store at New Vienna, Iowa.

That A. D. Lash's Hardware store, at Canton, Ohio, was robbed of \$25 worth of Revolvers a week or two since.

That Briden Bros. have bought out Bostwick & Baldwin, Hardware merchants, at Neche, N. D.

That F. L. Dilley, Tyler, Texas, has sold his Hardware business to W. C. Wiley and J. H. Adams. Mr. Dilley will hereafter devote his attention to his large fruit interests.

That C. C. Napp has sold his interest in the Hardware store at Stitzer, Wis., to Edward Kluckhohn.

That W. K. Morison & Co.'s Hardware establishment, at St. Paul, Minn., was burglarized on the night of the 20th ult., and about \$300 worth of Revolvers, Knives, Razors, &c., were carried off by the thieves.

That R. M. Wilson has purchased the Hardware stock of Jacob Dziubon, Parkville, Mo.

That the Turner Hardware Company, Muskogee, I. T., will soon erect a new two-story brick building just north of the one they now occupy.

That C. H. Rudge has purchased J. F. Morris' interest in the Hardware and furniture firm of Rudge & Morris, Lincoln, Neb.

That the firm of Wright & Ritner, at Hartsville, Ind., have been dissolved, G. N. Ritner having sold his share of the business to J. F. Wright, who will continue the retailing of Hardware and Implements under his own name.

That C. F. Taggart is about to embark in the Implement business at Freeport, Ill.

That Chas. Sohre of Good Thunder, Minn., will soon enter the Hardware business at Mankato, Minn.

That Sneed & Johnson, in the Hardware business at Streator, Ill., have sold out to W. A. Johnson.

That Henry A. Easton has been succeeded by Easton & Bump in the Hardware business at Patoskey, Mich.

That S. C. Sommers & Co., Hardware merchants, Stanton, Mich., have sold out to C. L. Grace.

That Lindley, Ronan & Co., Canton Pa., have purchased the Hardware business of J. W. Kinch, and will continue it at the old stand of B. S. Dartt. The firm is composed of Earl S. Lindley, Thomas Ronan and L. E. Manley, Mr. Lindley was formerly a clerk in the store, and has since been traveling for the Michigan Stove Company and the Corning Stove Company. Mr. Ronan is a tinner and plumber and has been connected with the firm of T. & M. W. Pierce for the past ten years, Mr. Manley is a well-known physician of Canton and will devote a part of his time to the office work in the store.

## Paints and Colors.

*It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.*

**White Lead.**—The market remains in a very disturbed condition, the result of gradual expansion of the competition in dry White Lead and sharp cutting of prices in nearly all instances where the independent corrodors and the National Lead Company met as competitors for desirable orders. Manufacturers of new process Lead have engaged in the contest sufficiently to make the affair a triangular one, while grinders who purchased but Linseed Oil and Dry Lead at extremely low rates are sellers of Lead in Oil at prices that add to the complicated condition of affairs to greater or less extent. Dry White Lead has been sold at 4¢ @ 4½¢, according to brand, while Lead in Oil has been dealt out at 5¢, in moderate sized lots, or about ¾¢ under the lowest figures named on the "combine" list. The low prices have stimulated business in some degree and rumors that the National Lead Company have absorbed, or are likely to absorb, the leading outside competitor, have also served to awaken interest on the part of buyers who are in a position to make the most of the existing turmoil. Otherwise business has improved to a very moderate extent only, since small buyers still purchase in a strictly perfunctory manner. Mixed Leads are selling at very low and irregular prices.

**Red Lead.**—Although not as sharp as in the instance of white Lead, the competition for orders for this commodity continues very keen and prices are low and irregular. Where really desirable orders were involved the price has touched 5¢, if, indeed, not a lower point, and at this writing contracts involving 10 tons or more would probably be taken at the figure quoted. Smaller quantities have realized a fraction more, but are relatively quite as cheap. Foreign stock, at present rate of duty, is too high in price to compete to any considerable extent with the domestic product.

**Litharge.**—Low grades have been taken rather more freely, in view of the extreme cheapness of prices, due to late sharp competition between the leading producers and outside manufacturers. Some of the Western brands have been sold at 4½¢, if not a shade less, and the price has been met by other concerns. The high grades have also been sold at more or less reduction from the prices quoted in the official list of the "combine." In fact, 4¾¢ would seem to reflect full market value for lots of 1 to 5 tons, near future delivery.

**Orange Mineral.**—Some improvement has been experienced in orders for foreign brands. French particularly. Of the latter sales have been made at from 10¢ up to 10½¢, according to quantity, brand and delivery. German brands have also met with somewhat better sale for future delivery, chiefly at 7¢ @ 7½¢, according to quantity and delivery.

**Zincs.**—Manufacturers of Zinc and Lead paints have given more attention latterly to Lead than to Zinc, since Lead has been relatively the cheapest, and new transactions in Oxide, therefore, make a somewhat indifferent showing. This superficial outside feature is offset in a measure by late reduction in supply of base material and stiffer tendency to prices for the same. Hence the old range of quotations prevails for the various grades of Oxide, prompt or near future delivery.

Foreign brands have met with somewhat better sale at recently modified list prices.

**Colors.**—Some increase has taken place in dry Colors particularly adapted to grinders' use. Sales have also been rather larger of mineral Paints and pulp Colors. Otherwise business is hardly up to the average for the season, although better than it was a few weeks ago, and prices have undergone hardly any change. There has been some improvement in sales of the leading lines of ready-mixed Paints, but hardly the volume of business usual at this season of the year.

## Oils and Turpentine.

**Linseed Oil.**—The various reports on the market are not without suggestion that uneasiness has cropped out in some quarters and that there are a few out of town crushers, to say nothing of dealers, who are looking to the main chance. Stated in other words, outside competition has not been wholly eliminated by recent maneuvers to bring the entire selling interest in harmony and the customary "cheap lots" come out at intervals. The competition, however, is tame, and 2¢ @ gallon would seem to cover the extreme difference between the price of outside lots and popular city brands. For the latter the basis of 50¢ for Raw Oil is generally adhered to.

**Cotton Seed Oils.**—Extreme dullness has characterized the market for this class of Oil. The large Western consumers seem to have temporarily withdrawn orders, exporters have manifested indifferent interest, and from other quarters there has been none but routine demand of the most pronounced type. Prices have undergone no decided change, being yet on the basis of 30¢ for prime Crude Oil and 34¢ @ 35¢ for prime Summer Yellow, but those figures represent sellers' ideas of value rather than actual selling basis, where anything in the nature of large lots may be involved. The irregularity and rather weakish tone to the market for Lard and inferior Greases has affected the market somewhat unfavorably.

**Lard Oil.**—Lower average prices for raw material have caused pressers to drop prices for prime winter Oil to 69¢, and sellers of out-of-town brands have gone a shade lower in some instances, or to about 68¢. Neither home trade nor export demand has been of other than very commonplace type, and the market has been dull as well as very soft. The low grades have remained unchanged in price and positively dull.

**Fish Oils.**—In this line the only feature has been a transaction on export account, involving about 300 barrels crude Sperm Oil. Few, if any, sales have been made of crude Whale or crude Menhaden Oil. For the pressed and bleached Oils there has been merely the routine jobbing demand, and prices, while showing no radical change, lean more or less in buyers' favor.

**Olive Oil.**—Prices for common grades have been lifted somewhat by speculative manipulations of a few importers, who took particular pains to circulate stories of short crop of olives that rest on very slender foundation. By this means quotations were advanced to 62¢ @ 63¢ on spot stock, but Oil now in transit may be secured at 58¢, if, indeed, at not less.

**Spirits Turpentine.**—There has been an advance of fully 1¢ @ gallon in prices during the past week. This is due in some measure to better general trade demand that usually develops at this season of the year, but movements of Southern operators have helped materially in carrying prices upward. Late sales were at 31½¢ for regular and 32¢ for machine barrels.

**The Search Light Bicycle Lantern.**

The accompanying cuts give two views of the Search Light bicycle lantern, being introduced by the Bridgeport Brass Company, Bridgeport, Conn., and 19 Murray street, New York. The lantern is designed for burning kerosene oil and is made entirely of brass, no tin being used in any of its parts. The lantern is 5½ inches high, 2½ inches

and foreign patents are pending. The lantern is referred to as an illuminator, not simply a signal, and bicycle riders will not be slow to avail themselves of a first-class bicycle lantern burning kerosene oil.

**Improved Sun No. 10 Cash Register.**

The cash register here illustrated is being offered by the Sun Mfg. Com-

the closed top, and there registers and adds the sale. These figures denote the sale in each denomination, the balls covering them as they roll to their respective places. At the close of the day's business, the cash footings being taken and the total sales being added, the frame cover is unlocked and the ball stops tripped, allowing the balls to roll into tubes, to be used over and over again. The extreme outside measure of the register is given as 19 inches long,

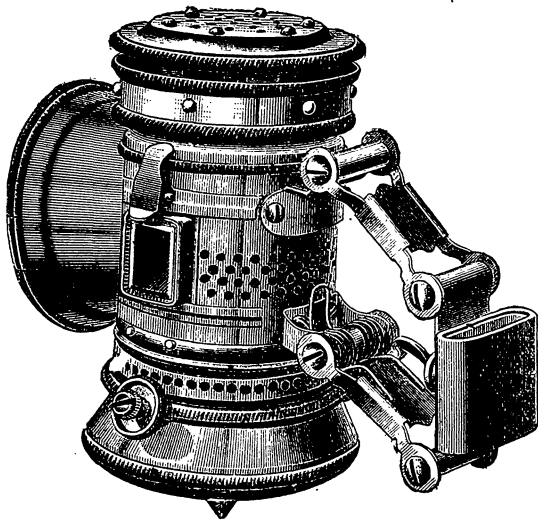


Fig. 1.—The Search Light.

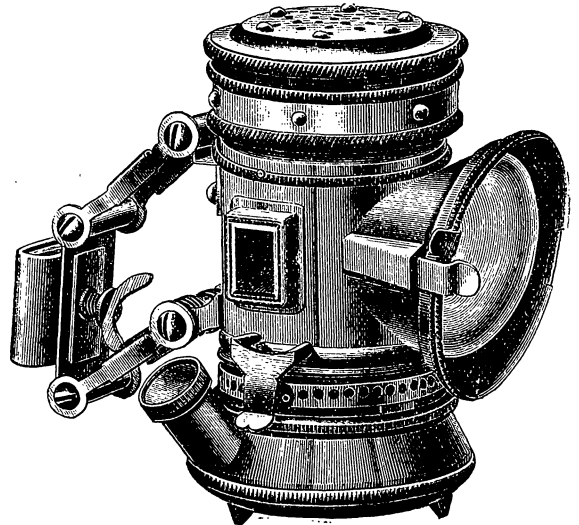
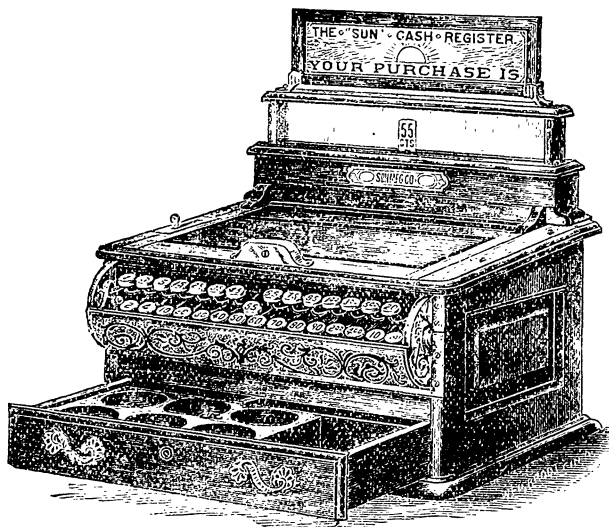


Fig. 2.—Reverse Side of Search Light.

in diameter, with a 2½-inch lens, and weighs 15 ounces. The filling, lighting and wick trimming are all done from the outside, and the lantern can be easily taken apart and cleaned. It is constructed upon the same principle as central draft lamps, and will burn, it is stated, for hours without trimming,

pany, Greenfield, Ohio. The mechanism throughout the register is described as being of metal, securely mounted in a solid metal frame, which is incased in a quartered oak cabinet. The front cover, push button and plate are made from brass, handsome in design and nickel plated. Thirty keys, each repre-

17 inches wide and 20½ inches high to the top of the sign. The manufacturers state that the machine is guaranteed to do all that is claimed for it, and that its moderate cost is among its attractive features.



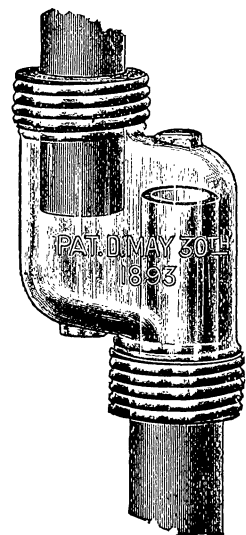
Improved Sun No. 10 Cash Register.

without the wick charring, at the same time the lantern remaining cool. A feature of the lantern is the provision made for holding the wick firmly in position, so it will not work down from the jarring of the wheel, this being accomplished by means of a jam nut. It is stated that the lantern can be left burning indefinitely without danger of melting; that it is perfect in mechanical construction, and handsome in design. The lantern is finished in japan or nickel plate, and is designed to retail at \$6 for the japan and \$7 for the nickel plated. United States

senting a different money denomination, are exposed at the front of the register. The operation of the machine is described as follows: When a sale is made the button is pushed, which opens the cash drawer, exposing the keys and sounding a bell. The key or keys representing the sale are then pushed down separately or simultaneously, thus exposing to view the indicator tablets bearing the amount of the sale, which may be seen from either side of the register. This operation also elevates a metal ball ¼ inch in diameter, which rolls down a V-shaped groove, under

**The Hurd Glass Refrigerator Trap.**

The Hurd Refrigerator Company, Duluth, Minn., are using the trap shown herewith in their refrigerators to prevent outside air and odors from getting into the refrigerator. The points of excellence claimed for the trap are as follows: It cannot rust and consequently cannot leak; being transparent



The Hurd Glass Refrigerator Trap.

the sediment can be seen and removed before the trap becomes clogged, and being of glass the dirt and filth from the ice will not cling to it as to metal, rendering it easy to keep it clean and sweet.

### Combined Step and Extension Ladder.

Priestley Express Wagon & Sleigh Company, Grand Rapids, Mich., for whom Horace F. Sise, 114 Chambers street, New York, is agent, are offering the step and extension ladder, as shown in Figs. 1 and 2. The castings at the top of the ladder are so arranged that when the ladder is closed the brace at the back unhooks from the step part, allowing the ladder to be extended, as in Fig. 2, when extended hooks on the bottom of the step part hook over the top round of the brace, holding it in position. When used as a step ladder it is held open by a malleable brace near the top. The manufacturers claim that

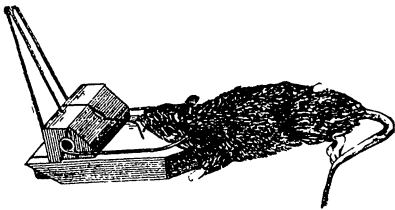


Fig. 1.—Combined Step and Extension Ladder

as a combined ladder the device is practical; that two persons can work on the step ladder, one on either side; that the braces are substantial and the malleable castings heavy; that choice Norway pine is used in its construction, and that the step ladder is easily and quickly extended to nearly double its height, which gives the benefit of two ladders in one. The step ladders are made in sizes from 4 to 12 feet, to extend from 7 to 23 feet.

### The Daisy Rat Trap.

The National Wringer & Mfg. Co., Canton, Ohio, are introducing the rat trap illustrated herewith. The steel springs are referred to as powerful and as



The Daisy Rat Trap.

always effective. The trap is sprung by moving the bait sideways or raising it. The trap is not inclosed, allowing the rat to enter from any side. The traps

are fully warranted by the manufacturers to give satisfaction, and are packed one dozen in a crate.

### National Measuring Faucet.

The National Specialty Mfg. Company, Philadelphia, are introducing the

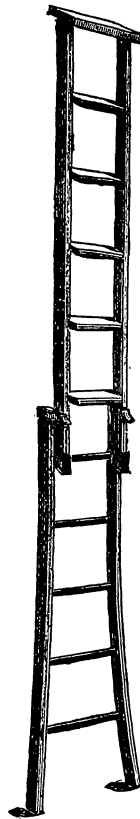


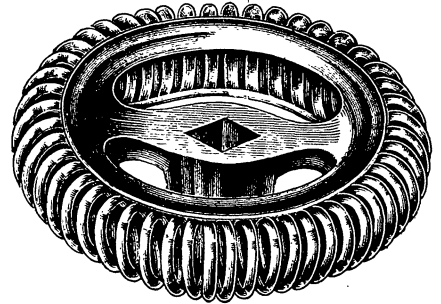
Fig. 2.—As an Extension Ladder.

measuring faucet herewith shown. The faucet is made of iron, nicely tinned and finished, having a square recording dial. The cut off is loosely fitted on the center screw, and the friction dur-

only when the mouth of the discharge piece is completely covered. The advantage claimed for the faucet is that there can be no wear on the gate or cut off leather, and that an absolutely tight closing is effected.

### Zero Steam Valve Wheel.

W. F. Greene of 1931 to 1937 Sixth avenue, Troy, N. Y., has just brought out a novelty in the way of a handle for a steam valve, an illustration of which is presented herewith. The body of the wheel consists of a malleable iron casting provided with a coiled wire edge,

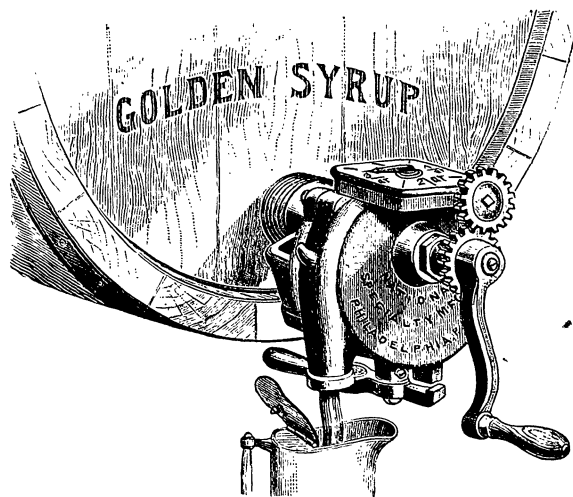


Zero Steam Valve Wheel.

so arranged as to render it always cool to the touch. The various parts are nickel plated and finished with a high polish. The device is strong, light and well adapted to serve the purpose for which it is intended.

### Motley's Adjustable Sash Holder.

Peter Motley, 750 South Broad street, Philadelphia, is calling attention to an improved application of his adjustable sash holder for locking window screens. For this purpose a notch is cut in the wood runway upon which the screen slides, so that the holder will spring into it when the screen is shut down. Another notch is cut so as to



National Measuring Faucet.

ing operation is taken at the lower end by means of an incline, which fits a similar incline on the back stop. It is stated that in operation friction is reduced to a minimum, the whole being taken by the inclines and occurring

lock the screen when covering the upper sash space. This is known as the notch or lock feature. The holder is referred to as thoroughly effective without the notch for holding the screen in a raised position and for general use.

### Hy Lo Instantaneous Changeable Gear.

The accompanying cuts represent a changeable gear to be attached to any bicycle, being introduced by Louis Rosenfeld & Co., 56 Beaver street, New York. In Fig. 1 the gear is shown on a bicycle, and adds, the manufacturer states, from  $2\frac{1}{2}$  to  $2\frac{3}{4}$  pounds to the weight of the machine. The attachment is operated by a lever on the upper bar of the machine near the head. The lever is connected to the gear by rods and chains, chains being used over curved surfaces. Fig. 2 represents the pedal attachment at high gear, with the dust cap partially cut away to give a view of the interior. At high gear,

be thrown out of gear for coasting or when walking beside the machine. In Fig. 4 a back view of the attachment is given, showing the pulley over which the chain passes, also the cam by which the gear wheels are operated. The gear is changed while riding for hill climbing or for level roads, requiring no stop, the change being unaccompanied by any jerk. The gear is adapted to ladies' machines by running the connections down the head and along the bent frame. The manufacturer remarks that the arrangement is simple, consisting of two gear wheels and one locking ring, that no additional friction is discernible, that the material used is the best quality steel, nickel plated, with all wearing parts hardened, that the device requires but one extra ball

The manufacturer does not make bicycles, but simply the gear, which will be attached to any make of wheel by the maker of the gear, if the owner so desires.

BRIDGEPORT BRASS COMPANY, New York office 19 Murray street, are now

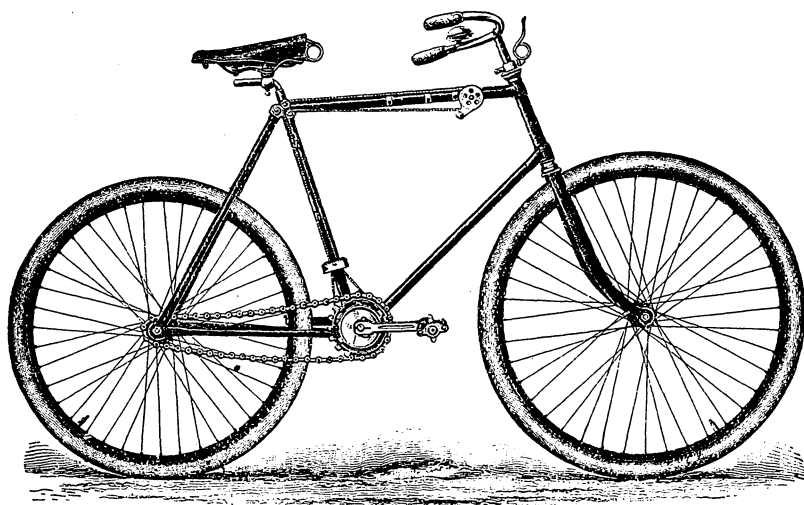


Fig. 1.—Hy-Lo Instantaneous Changeable Gear.

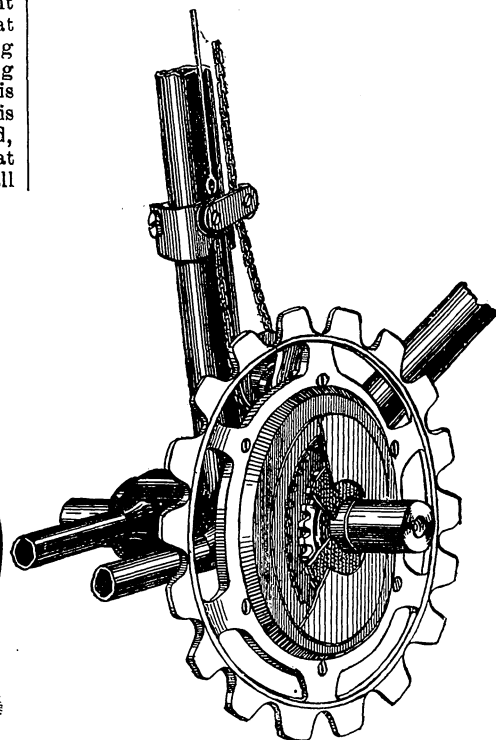


Fig. 2.—Pedal Shaft Attachment at High Gear.

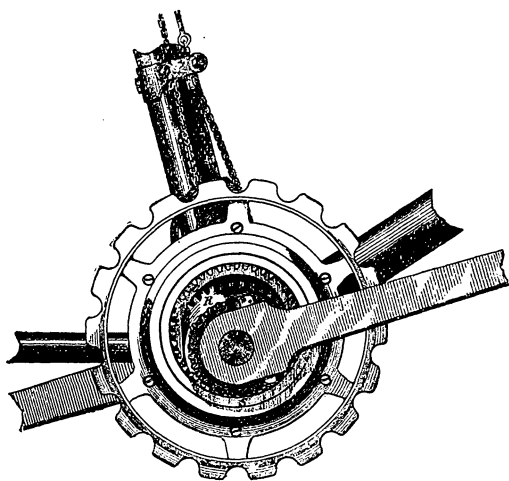


Fig. 3.—Front View of Pedal Shaft Attachment at Low Gear.

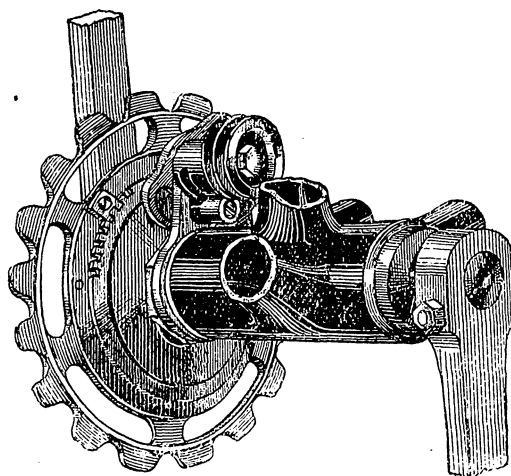


Fig. 4.—Back View of the Attachment.

as here shown, the attachment is equivalent to the usual sprocket wheel, all parts then being locked. In Fig. 3 the dust cap is entirely removed to show the pedal shaft attachment at low gear. The locking ring for high gear is represented by R, and is idle in this position. To change the machine from high to low gear, or *vice versa*, the lever handle is turned to the extreme front or rear, to a position parallel with the bar to which it is attached. If the lever is given a half turn, so as to stand perpendicular to the bar, both gears are idle, and in this position the pedals do not revolve. The mechanism may thus

bearing, and that it can be attached without injury to a machine or to its appearance. It is explained that strong riders, such as are accustomed to high gears, could with this gear use still higher, as for instance a 72-inch high and a 57-inch low gear, and therewith increase their speed from 1 to 2 miles per hour. It is further stated that for others the high gear may be above the gear to which they are accustomed, and the low gear materially lower—a rider accustomed to a 54-inch gear thus using a 60-inch high and 45-inch low gear, or thereabout. A large range of gears is given from which to choose.

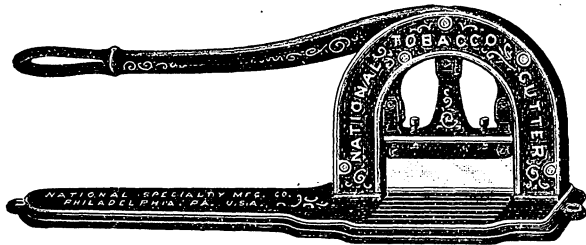
the exclusive selling agents of the Housatonic Mfg. Company, formerly the Housatonic Brass Company. The latter company have been thoroughly reorganized and new capital has been put in. Hereafter they will manufacture novelties only in brass and German silver. The officers recently chosen are: Charles A. Hamilton, president, and E. A. Russell, secretary and treasurer. The following constitute the present Board of Directors: Charles A. Hamilton, Gurd Hall, E. A. Russell, J. B. Underwood and Charles X. Cordier, several of whom, it will be observed, are also prominent in the Bridgeport Brass Company.



**National Tobacco Cutter.**

The National Specialty Mfg. Company, Philadelphia, are introducing the tobacco cutter here shown. The novel feature in the construction of this cutter is in the arrangement of the working parts, they being so arranged that when the cutter is operated no part appears

with smooth iron bearings to make the wringer easy of operation. The springs are of oil tempered steel, which, it is stated, are tested to 1500 pounds pressure. The rollers are referred to as being of the best quality of white rubber, solid through to the shaft, no twine or wire being used, vulcanized, and warranted by the makers not to become loose. The rolls are adjusted by a top

*National Tobacco Cutter.*

outside of the arch frame. Another feature is the central pressure of the knife when in operation, obtained by placing the connecting pin of the lever directly in the center of the arch frame. The knife is made of fine steel and is provided with a brass bed plate let into a groove in the base. The base frame and working parts are of iron, handsomely japanned and ornamented with gold lines.

**Winchester Metal Lined Shell.**

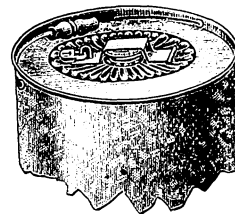
Winchester Repeating Arms Company, New Haven, Conn., and 312 Broadway, New York, are putting on the market metal lined paper shot shells, as illustrated herewith. The shell is specially designed for nitro powders, and is reinforced inside and outside

screw in the center to insure an absolutely even pressure on all parts of the rolls. The wringer is fitted with guides to prevent the clothes from running in between the frame and the end of the rolls. Particular attention is called to the fact that the wringer has gear wheels; also that it has all the features of all wood or iron frame wringers, besides many improvements. It is remarked that the King is an improvement over the Erie wringer made by this company, and is patented; patents on both wringers belonging to the company.

**The Columbian Faucet Can.**

Hart Mfg Company, Troy, N. Y., are putting on the market the can herewith shown, designed for oil and gaso-

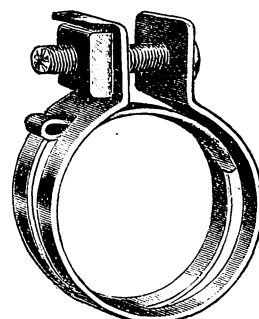
breakage in shipping or loss of oil when not in use. The manufacturers state that the faucet is of brass and may be safely guaranteed not to leak, drip or break with proper handling, as it has no packing and is ground in such a manner that all wear is taken up at the end by a set screw, which can be adjusted by any one. The can is made of galvanized iron with tin top and has a perforated drip cup to prevent the escape of gasoline during transportation. It is stated that the can is safe and convenient, and that it may be closed up perfectly tight. In Fig. 2 is shown a top with hasp, which is designed exclusively for oil men, so that they only

*Fig. 2.—Top with Hasp for Lock.*

can fill the can, as the person having the key alone has access to the can for filling. The can is made in 5 and 10 gallon sizes.

**Redfield's Sure Grip Hose Clamp.**

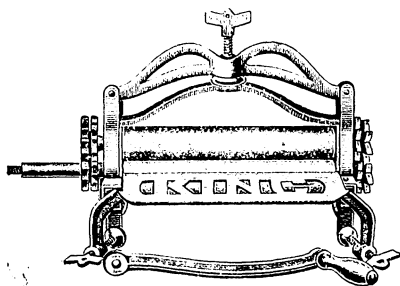
The accompanying illustration shows a device put on the market by J. R. Clancy, Syracuse, N. Y., known as Redfield's Sure Grip hose clamp. The clamp is made of wrought steel and many special advantages are claimed for it besides being low in price. A feature to which particular attention is directed is that

*Redfield's Sure Grip Hose Clamp.*

with brass. The brass outside the shell is 1 inch long and the lining inside  $\frac{3}{4}$  inch long. The shells at present are made in 12 gauge,  $2\frac{1}{2}$  inches long.

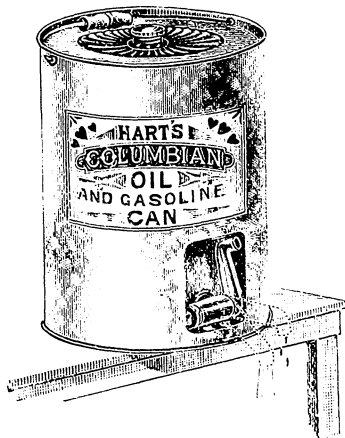
**The King Wringer.**

The accompanying cut represents an iron frame wringer, offered by the National Wringer & Mfg. Co., Canton,

*The King Wringer.*

Ohio. The frame is entirely of iron and steel, every part being galvanized to render it rust proof, and is made

line. The spout is hung on a swivel so that the stream can be stopped at once by raising the spout. It is claimed that

*Fig. 1.—The Columbian Faucet Can.*

the out-off is so perfect that there is no possibility of drip or of waste. The spout, when not in use, is turned up within a hood, making it safe from

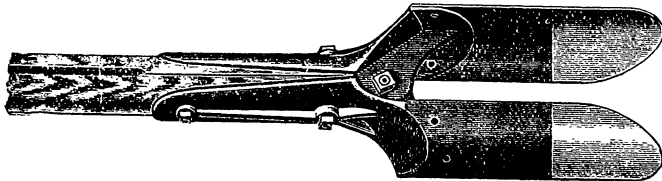
the construction offers a true inner circle before and after tightening. It will be seen from an inspection of the engraving how this is accomplished. The clamp at present is being made in sizes of 1 inch for two and three ply garden hose,  $\frac{3}{4}$  inch for three ply,  $\frac{1}{2}$  inch for four ply and 1 inch for three ply; also  $1\frac{1}{2}$ -inch air brake or steam hose.

In the show window of an optician's shop on Tremont street, Boston, is a line of compasses which perform gyrations marvelous to the lay mind, and which incidentally afford an attractive and mysterious advertisement for the proprietor. They are to all appearances not connected with any source of motion, and yet the needles move all the time from right to left, and sometimes swing quite around the circle of their little boxes. The reason is that the return current from the trolley lines on Tremont street exerts an attraction on the compass needles and causes the mysterious motions.

### The Hustler Post Hole Digger.

Gibbs Mfg. Company, Canton, Ohio, for whom J. H. Graham & Co. are agents, 113 Chambers street, New York, are offering the post hole digger shown in the accompanying cut. The single round handle opens in halves to operate, being, it is stated, easily grasped

gutter, the object of the holes being to admit a sufficient quantity of air under plate No. 3 to support combustion, which it does, it is explained, by passing over the surface of the burning oil, and mingling with it, causes a highly inflammable mixture, which passes out under the outer edge of plate No. 3. It is further explained that there it



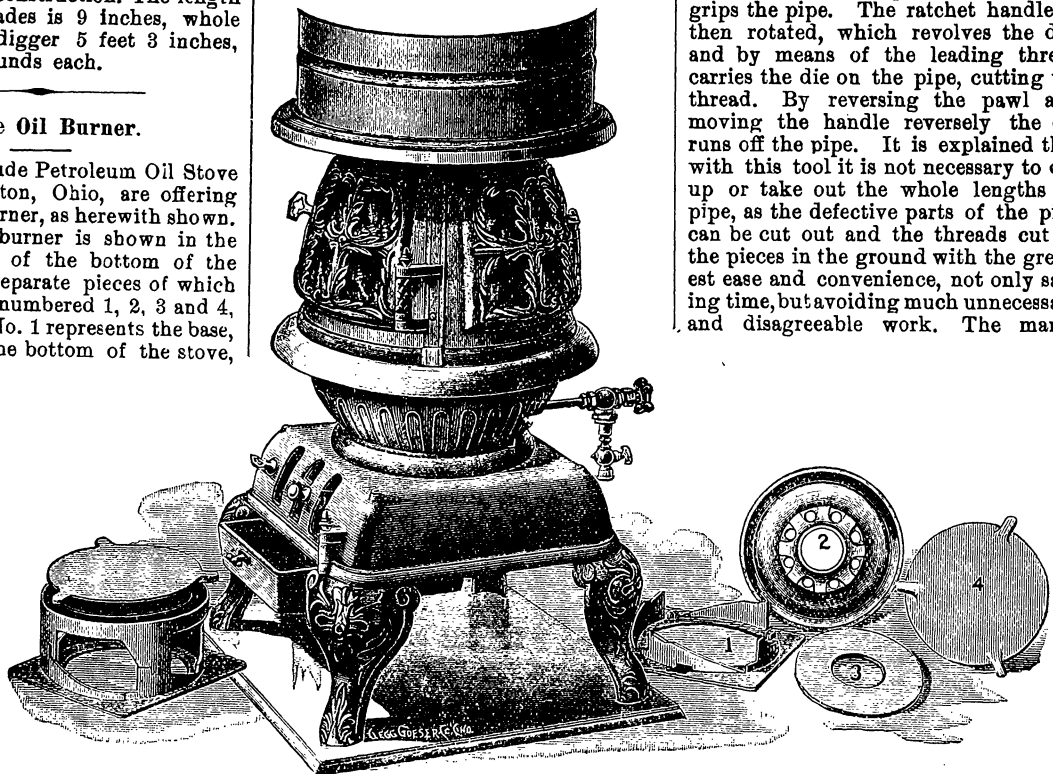
*The Hustler Post Hole Digger.*

and less tiresome than two separate handles, and avoids pinching the hands of the operator. The point is made that the special style of bolting the handles to the shanks in round form enables them always to be kept tight in case of shrinkage; also that a shoulder is provided at the bottom to receive the full thrust instead of the bolts, preventing the handles from splitting. By removing the steel bolt the digger can be used as separate shovels for filling in ground. The manufacturers claim the tool combines simplicity with correct form for easy and rapid digging; that it is neat in design, finely finished, strong and durable, and that only the best materials are used in its construction. The length of the steel blades is 9 inches, whole length of the digger 5 feet 3 inches, weighing 9 pounds each.

### Crude Oil Burner.

The Ohio Crude Petroleum Oil Stove Company, Ironton, Ohio, are offering the crude oil burner, as herewith shown. The complete burner is shown in the cut at the left of the bottom of the stove, and the separate pieces of which it is composed, numbered 1, 2, 3 and 4, on the right. No. 1 represents the base, which fits on the bottom of the stove,

comes in contact with a volume of fresh air, which passes up through the central opening, and, striking against the bottom of plate No. 4, is deflected so as to come in contact with the vapor of the burning oil, supplying it with oxygen and making a mixture which burns with a bright blaze and intense heat. Testimonies attest to the efficiency of the burner and the satisfaction it gives, and the local Board of Insurance Underwriters are issuing policies permitting the use of the device. We are advised that the burner for heating stoves is at present only adapted for adjusting to the cook stoves made by the Foster Stove Company, Findlay,



*Crude Oil Burner.*

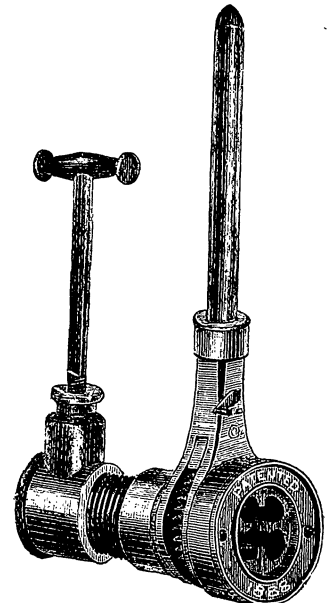
and has four inclined planes, which correspond to similar planes on the bottom of the burner. The burner, being placed on the base and slipped into the lower part of the stove through the ash pit door, is rotated one-fourth revolution to the left; the planes acting on each other raise the burner to its place. The oil trough extends the entire distance around the burner, while the line of small holes surrounding the central opening in the burner is covered by plate No. 3, which partially covers the oil gutter. The small holes are cut away a little on the side next to the oil

Ohio. Later, however, they will be made to adjust to any cook stove.

### Climax Ratchet Stock

Clarence M. Kemp, Baltimore, Md., is offering a ratchet stock, as shown in the accompanying cut. The tool is made entirely of malleable iron and steel, and is designed to be light enough in weight to be comfortably carried in a tool bag, and at the same time strong and heavy enough to stand hard usage and rough treatment. A

feature of the tool is a vise attachment, which is located at the lower end of the handle, at the left of the cut. In operation the tool is slipped on the pipe to be threaded until the end of the pipe comes in contact with the die, and the



*Climax Ratchet Stock.*

handle is screwed up so the vise firmly grips the pipe. The ratchet handle is then rotated, which revolves the die, and by means of the leading thread carries the die on the pipe, cutting the thread. By reversing the pawl and moving the handle reversely the die runs off the pipe. It is explained that with this tool it is not necessary to dig up or take out the whole lengths of pipe, as the defective parts of the pipe can be cut out and the threads cut on the pieces in the ground with the greatest ease and convenience, not only saving time, but avoiding much unnecessary and disagreeable work. The manu-

facturer states that every tool is guaranteed, and any part can be duplicated if necessary; also that dies, if furnished, are extra. The tool is made in two sizes: No. 1, threading  $\frac{1}{4}$  to 1 inch pipe, taking dies 2 or  $2\frac{1}{2}$  inches square; No. 2, threading  $1\frac{1}{4}$  to 2 inch pipe, taking dies 4 inches square.

C. H. and L. P. GRAHAM, Hardware merchants, of Hinton, W. Va., have taken A. J. Baker into the firm, and have changed its style to that of the Graham Hardware Company.

# Current Hardware Prices.

FEBRUARY 7, 1894.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

The character @ is used to indicate a range of price; thus discount 50&100@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

## Adjusters, Blind—

Domestic ..... \* doz \$3.00, 33 1/4 @ 33 1/4 & 10 %  
Excelsior ..... \* doz \$10.00, 50 & 10 & 2 %  
North's ..... list net @ 10 %  
Zimmerman's—See Fasteners Blind.

## Ammunition—See Caps, Cartridges, Shells, &c

## Anvils—

American—  
Eagle Anvil, \* doz. 15 @ 15 & 5 %  
Horse shoe brand, Wrought. 11 @ 11 1/2  
Moore & Barnes Mfg. Co. 33 1/2 @ 33 1/2

## Imported—

Armitage Mouse Hole 10 1/4 @ 11 1/2  
S. & H. machine finished. 10 1/4 @ 11 1/2  
Trenton 10 1/4 @ 11 1/2  
Wilkinson's 10 1/4 @ 11 1/2  
Peter Wright's. 11 @ 11 1/2

## Anvil Vise and Drill—

Allen Anvil and Vise \$3.00 40 & 10 %  
Cheney Anvil and Vise 25  
Millers Falls Co. \$18.00 20 %  
Star 45 & 5 %

## Apple Parers—See Parers Apple, &c.

## Augers and Bits—

Boring Machine Augers. 70 @ 70 & 10 %  
Car Bits, 12-in. twist. 30 @ 30 & 10 %  
Common Augers and Bits 70 @ 70 & 10 %  
Cincinnati Bell-Hangers' Bits. 30 @ 30 & 10 %  
Forstner Pat. Auger Bits. 15  
Jennings' Pattern Car Bits. 40 %  
Jennings' Pattern Auger Bits. 60 %  
C. E. Jennings & Co., No. 10, extension 40 %  
C. E. Jennings & Co., No. 30. 40 %  
C. E. Jennings & Co., Auger Bits. \* set 32 1/4 quaters, No. 5, \$5; No. 30, \$3.50, 25 %  
Russell Jennings' Augers and Bits. 25 & 10 %  
Lewis' Patent Single twist. 45 %  
L'Hommedieu Car Bits. 15 & 10 %  
Pugh's Black. 30 %  
Pugh's Jennings Pattern. 30 %  
Snell's Bits. 60 & 5 %

## Bit Stock Drills—

Cleveland. 50 & 10 & 5 %  
Cincinnati, for wood. 30 @ 30 & 10 %  
Cincinnati, for metal. 45 @ 45 & 10 %  
Morse Twist Drills. 50 & 10 & 5 %  
New Process Twist Drill Co. 50 & 10 & 5 %  
Standard. 50 & 10 & 5 %  
Syracuse, for metal. 50 & 10 %  
Syracuse, for wood (wood list). 30 @ 30 & 5 %

## Expansive Bits—

Clark's small, \$18; large, \$26. 35 @ 35 & 10 %  
Ives' No. 4, \* doz. \$80. 40 %  
Steer's, No. 1, \$26; No. 2, \$18. 35 @ 35 & 10 %  
Stearns' No. 2, \$48. 20 %  
Swan's. 40 %

## Gimlet Bits—

Bee 25 @ 25 & 5 %  
Common \* gross \$2.75 @ \$3.25  
Diamond \* doz \$1.25 @ \$1.50  
Double Cut:  
Shepardson's. 45 @ 45 & 10 %  
Ct. Valley Mfg. Co. 30 @ 30 & 10 %  
Hartwell's. \* gross, \$10.00. 40 & 10 %  
Douglass'. 40 & 10 %  
Ives. 60 @ 60 & 10 %

## Hollow Augers—

Bonney's Adjustable, \* doz \$48. 50 %  
Cincinnati Adjustable. 25 & 10 %  
Cincinnati Standard. 25 & 10 %  
Douglass'. 33 1/4 @ 33 1/4 & 10 %  
French, Swift & Co. (Beecher). 33 1/4 @ 33 1/4 & 10 %  
Ives'. 33 1/4 @ 33 1/4 & 10 %  
Ives' Expansive, each \$4.50. 60 & 5 %  
Stearns'. 20 & 10 %  
Universal Expansive, each \$4.50. 20 %  
Wood's. 25 @ 25 & 10 %

## Ship Augers and Bits—

L'Hommedieu's. 15 & 10 @ 15 & 10 & 5 %  
Snell's. 25 @ 25 & 10 %  
Snell's Ship Auger Pattern Car Bits. 15 & 10 @ 15 & 10 & 5 %  
Watrous'. 25 @ 25 & 10 %

## Awl Hafts—See Hafts, Awl.

## Awls—

Awls, Sewing, Common. \* gr. 85 @ 85 & 10 %  
Awls, Should. Peg. \* gr. \$1.50 @ \$1.55  
Awls, Pat. Peg. \* gr. 35 @ 35 & 10 %  
Awls, Shouldered Brad. \* gr. \$1.30 @ 1.40  
Awls, Handled Brad. \* gr. \$2.50 @ \$3.00  
Awls, Handled Scratch. \* gr. \$4.00 @ 4.50  
Awls Socket Scratch. \* doz. \$1.10 @ \$1.20

## Awl and Tool Sets—See ta, Awl and Tool.

## Axes—

First quality, best brand \$7.00 Beveled. 87.50  
First qual., other brands 6.50 7.00  
Second quality 5.50 6.00

## Axle Grease—See Grease, Axle.

## Axles—

No. 1. 3 1/4 @ 4 1/4 @ 4 1/2 @ 5 1/2  
Nos. 7 to 14. 70 %  
Nos. 15 to 28. 47 1/2 %  
Nos. 19 to 22. 70 %  
Concord Axles, loose collar. 3 % cash  
Concord Axles, solid collar. 4 1/4 @ 5 1/2 @ 6 1/2

## Bag Holders—See Holders, Bag.

## Balances—

Pullman. 33 1/2 %  
Spring—  
Spring Balances. No. 2000 20 30 40 %  
Chatillon, \* doz. \$0.80 0.95 1.75 net  
Chatillon Straight Balances. 40 %  
Chatillon Circular Balances. 50 & 10 %

## Barb Wire—See Wire, Barb.

## Bars—

Crow—  
Cast Steel. \* doz. 3 1/2 @ 3 1/2  
Iron, Steel Points. \* doz. 3 1/2 @ 3 1/2

## Basins, Wash—

Standard Fiberglass, No. 1, 10 1/4-in. \$1.80;  
12-inch, \$2.00; 13 1/4-inch, \$2.50; 15-inch, \$3.00.

## Beams, Scale—

Scale Beams, List Jan. 12, '87. 50 & 10 %  
Chatillon's No. 1. 40 %  
Chatillon's No. 2. 50 %  
Custer's. 33 1/2 %

## Beaters—

Egg—  
Bryant's. \* gross \$14.00  
Double (H. & R. Mfg. Co.), \* gross, No. 1 \$12.00; No. 1, \$15.00; No. 2, \$38.00  
Dover. \* doz \$1.00 @ \$1.20  
Dover (Standard Co.). \* doz \$1.00  
Duplex (Standard Co.). \* doz \$1.00  
Duplex Extra Heavy (Standard Co.). \* doz \$3.50  
Easy (H. & R. Mfg. Co.). \* doz \$12.00  
Improved Acme (H. & R. Mfg. Co.). \* doz \$9.00  
Silver & Co. \* doz \$5.50  
Spiral. \* gro \$4.25 @ \$4.50  
Triple (H. & R. Mfg. Co.). \* gro \$16.60

## Culinary—

Keystone, P. D. & Co., Each, No. 1, \$1;  
No. 2, \$2 20 %

## Bells—

Cow—  
Common Wrought. 60 & 10 %  
Kentucky Durham. 70 & 10 %  
Kentucky, Sargent's list. 70 & 10 %  
Kentucky, "Star". 20 & 10 %  
Texas Star. 50 & 10 @ 50 & 10 & 5 %  
Western, Sargent's list. 70 & 10 %

## Door—

Crane, Brooks'. 50 & 10 & 2 %  
Crane, Connel's. 10 %  
Crane, Connel's. 20 & 10 %  
Gong, Abbe's. 33 1/2 @ 33 1/2  
Gong, Barton's. 40 & 10 @ 40 %  
Gong, Yankee. 45 & 10 %  
Lever, R. & E. Mfg. Co.'s. 50 & 10 & 2 %  
Lever, Sargent's. 60 & 10 %  
Lever, Taylor's Bronzed or Plated. net  
Lever, Taylor's Japanese. 25 & 10 %  
Pull, Brook's. 50 & 10 & 2 %

## Electric—

Rigelow & Dowse. 20 %  
Wollensak's. 20 %

## Hand—

Extra Heavy Brass. 70 %  
Light Brass. 70 & 10 @ 70 & 10 & 5 %  
Silver Chime. 33 1/4 @ 33 1/4  
White. 45 & 10 %  
Globe Cone's Patent. 25 & 10 @ 30 %

## Miscellaneous

Call. 45 @ 50 %  
Farm Bells. \* doz \$3 @ 3 1/2  
Steel Alloy Church and School Bells. 30 %

## Bellows—

Blacksmiths'. 60 & 10 & 5 @ 60 & 10 & 10 %  
Hand Bellows. 40 & 10 @ 50 %  
Molders'. 40 & 10 @ 50 %

## Belted, Rubber—

Common Standard. 75 @ 75 & 10 %  
Extra. 60 & 10 @ 60 & 10 & 10 %  
Standard. 70 & 5 @ 70 & 10 %  
N.Y.B. & P. Co., Carbon. 60 @ 60 & 5 %  
N.Y.B. & P. Co., Diamond. 60 @ 60 & 5 %  
N.Y.B. & P. Co., Para. 40 @ 40 & 5 %

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Detroit Perfected Tire Bender. 15 %  
Green River Tire Benders and Upsetters. 20 %  
Stoddard's Lightning Tire Upsetters. 15 %

## Bits—

Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—

Cleveland Block Co., Mal. Iron. 5 @ 10 & 6 %  
Green Novelty, Mal. Iron. 25 %  
Surrey Grip Steel Tackle Block. 25 %  
See also Machines, Hoisting.

## Bolts—

## Carriage, Machine, &c.—

Com. list June 10, '84. 80 & 10 %  
Genuine Eagle, Norway, list Oct. '84. 80 & 10 %  
Eagle, Norway, list Oct. '84. 80 & 10 %  
Phila. pattern, list Oct. '7. '84. 80 %  
R.B. & W., old list. 70 %  
Roit Ends, list Jan. 1, 1890. 80 & 10 @ 80 & 20 %  
Machine, list Jan. 1, 1890. 30 & 10 @ 80 & 20 %

## Door and Shutter—

Cast Iron Barrel, Square, &c. 70 & 10 %  
Cast Iron Chain (Sargent's list). 65 & 10 %  
Cast Iron Shutter Bolts. 70 & 10 %  
Ives' Patent Door Bolts. 60 & 10 @ 60 & 10 & 5 %  
rought Barrel. 70 & 10 @ 75 %  
W.R. & K. Flush, Common. 55 & 10 %  
W.R. Shutter, Brass Knob. 50 @ 50 & 5 %  
W.R. Shutter, Sargent's list. 60 & 10 %  
W.R. Shutter, all iron, Stanley's. 60 & 10 @ 60 & 10 & 10 %  
Wrought Square. 70 & 10 @ 75 %  
W.R. Sunk Flush, Sargent's list. 60 & 10 %  
W.R. Sunk Flush, Stanley's list. 50 & 10 & 5 %

## Stove and Plow—

Plow. 40 & 10 & 5 @ 60 & 10 & 10 %  
Stove. 60 & 10 @ 60 & 10 & 10 %  
R. B. & W., Plow. 55 %

## Tire—

Common, list Feb. 28, '83. 65 @ 65 & 5 %  
American Screw Company  
Norway, Phila., list Oct. 18, '84. 75 %  
Eagle, Phila., list Oct. 16, '84. 80 %  
Philadel., list Oct. 16, '84. 80 %  
Bay State, list Feb. 28, '83. 65 %  
Port Chester Bolt and Nut Company  
Empire list Feb. 28, '83. 65 %  
Keystone, Philadel., list Oct. '84. 80 %  
Norway, Phila., list Oct. '84. 75 %  
R. B. & W., Philadel., list Oct. 16, '84. 80 %

## Bores, Tap—

Common and Ring. 20 & 10 %  
Clark's. 33 1/4 @ 33 1/4  
Enterprise Mfg. Co. 20 %  
Ives' Tap Bore. 33 1/4 @ 33 1/4

## Boring Machines—See Machines, Boring.

## Bow Pins—See Pins, Bow.

## Boxes, Wagon—

Per doz. 24 %  
Boxes, Miter.  
Spilker's Excelior, 3 in. \$7.50, 4 in. \$8.50, 5 in. \$13.00, 6 in. \$16.00. 20 %

## Braces—

American Bit Brace and Tool Co.  
Nos. 10, 12, 20. 60 & 10 %  
Nos. 11, 21, 24, 27. 70 & 10 %  
Nos. 22, 23, 25. 60 & 10 & 5 %  
Nos. 13, 26, 36, 37. 70 & 10 & 5 %  
Amidon's  
Barker's Imp'd Plain. 75 & 10 @ 80 %  
Barker's Imp. Nickeled. 65 & 10 @ 70 %  
Ratchet. 75 & 10 @ 80 %  
Eclipse Ratchet. 60 %  
Globe Jawed. 40 @ 40 & 10 %  
Corner Brace. 40 @ 40 & 10 %  
Versal, 3 in. \$2.10; 10 in. \$2.25  
Buffalo Ball. \$1.10 @ \$1.15  
Barber's. 50 & 10 %  
Bartholomew's.  
Nos. 25, 27 and 30. 50 & 10 @ 60 & 5 %  
Nos. 117, 118, 119. 70 @ 70 & 5 %  
Common Ball, American. \$1.00 @ \$1.10  
Davis Patent. 60 & 10 %  
Fray's Genuine Spotted. 50 & 10 @ 60 %  
Fray's Nos. 70 to 120, 81 to 123. 207 to 414  
50 & 10 %

Ives' New Haven Novelty. 70 @ 70 & 5 %  
New Haven Ratchet. 60 & 10 @ 60 & 10 %  
Barber Ratchet. 60 & 10 @ 60 & 10 %  
Barker's. 60 & 10 @ 60 & 10 %  
Spotted. 60 & 10 @ 60 & 10 %  
P. S. & W. Co., Peck's Patent. 60 %  
Rose & Johnson. 60 %  
Saxton's  
Barker's Imp. Polished. 75 & 10 @ 80 %  
Barker's Imp. Nickeled. 65 & 10 @ 70 %  
Ratchet, Polished. 50 & 10 @ 60 %  
Ratchet, Nickeled. 40 & 10 @ 50 %  
Buffalo Ball. net, \$1.10 @ \$1.15

## Brackets—

Shelf, fancy  
Sargent's list. 70 @ 70 & 10 %  
Other makes at a wide range of prices.  
Shelf, plain.  
Regular, list. 85 @ 70 %  
Sargent's list. 60 & 10 @ 70 & 10 %  
Bradley Shelf Brackets. 70 & 10 %

## Bright Wire Goods—See Wire.

## Broilers—

Hen's Self. 9 10 9x11  
Castings. Per doz. \$4.50 5.56 5.50  
Morgan's Odorous. \* doz. \$12.50  
New Haven. 50 %  
Queen City. 33 1/4 @ 33 1/4  
Wire Goods Co. 65 & 10 %

## Buckets, Well—

## Galvanized—

Helwig's Flat Iron Band. \$3.75  
Helwig's Wired Top. \* doz \$4.00  
Hill's. \* doz. 12 qt. \$4.25; 14 qt. \$5.25  
Iron Clad. \* doz. 14 qt. \$4.25 @ 4.50

## Bull Rings—See Rings, Bull.

## Butcher's Cleavers—See Cleavers, Butchers.

## Butts—

Cast Brass, Fast. 33 1/4 @ 33 1/4  
Cast Brass, Loose Joint. 33 1/4 @ 33 1/4  
Cast Brass, Tiebout's. 60 %  
Wrought Brass. 80 @ 80 & 10 %

## Cast Iron—

Fast Joint, Broad. 50 & 10 @ 60 %  
Fast Joint, Narrow. 50 & 10 @ 60 %  
Loose Joint.  
Loose Joint, Japanned.  
Loose Joint, Jap. with Acorns.  
Loose Pin, Acorns, Japanned.  
Loose Pin, Acorns, Japanned.  
Loose Pin, Acorns, Japanned.  
Plated Tips.  
Mayer's Hinges.  
Parliament Butts.

## Wrought Steel

Fast Joint, Broad.  
Fast Joint, Narrow.  
Fast Joint, Lt. Narrow.  
Inside Blind, Light.  
Inside Blind, Regular.  
Loose Joint, Broad.  
Loose Pin.  
Table Butts, Black Flaps, &c.  
Bronzed Wrought Butts.

## Cages, Bird—

Hendryx, Brass or Enameled. 50 & 10 %  
Hendryx, Wood. 40 & 10 %

## Calipers—See Compasses

## Calks Toe—

Burke's, One Prong, Blunt. 5 1/2 @ 6  
Burke's, One Prong, Sharp. 6 1/2 @ 7  
Burke's, Two Prong, Blunt. 7 1/2 @ 8  
Gautier, One Prong, Blunt. 5 1/2 @ 6

## Can Openers—See Openers, Can.

## Cans, Milk—

S. S. & Co.: 5-gal., \$3.00; 8-gal., \$4.40;  
1-gal., \$4.75 each 40 & 10

## Cans, Oil—

Galvanized Blue Band, 1 gal., \* doz. \$2.25  
Galvanized Blue Band, 5 gal., \* doz. \$12.00  
Galvanized Blue Band, 5 gal. Faucet, \* doz., \$5.00  
Glass Oil, Friend. \* doz. \$2.75

## Caps—

## Percussion—

Hicks & Goldmark's and Union Metallic  
Cartridge Co. \* 1000  
Eley's E. 50 & 58 %  
Eley's D Waterproof, Cent. Fire, 1-10's \$1.60  
E. B. Grnd. Edge, Cent. Fire, 1-10's. 47 @ 50 %  
E. B. Trimmed Edge, 1-10's. 47 @ 50 %  
F. L. Waterproof, 1-10's. 35 @ 37 %  
G. D. 27 @ 30 %  
Musket, Waterproof, 1-10's. 50 @ 53 %  
S. B. Genuine Primers. 45 %

## Primers

Berdan Primers, \$1.00. 25  
B. L. Caps (Sturtevant Shells) \$1.00. 25  
All other Primers, \$1.20. 25

## Cards—

Watson's Cotton, Wool, Horse and  
File, list January 28, 1891. 25 %

## Carpet Stretchers—

## See Stretchers, Carpet.

## Cartridges—

B. B. Caps, Con. Ball, Swgd. \$1.85 @ \$1.90  
B. B. Caps, Round Ball. \$1.60 @ \$1.65  
Blank Cartridges, except 22 and 32 cal.,  
additional 10 % to above discounts.  
Blank cartridges, 22 cal. \$1.75. 2 %  
Blank Cartridges, 32 cal., \$3.50. 2 %  
Cent. Fire, Military and Sporting. 15 & 5 @ 25 %  
Cent. Fire, Pistol and Rifle. 25 & 5 @ 25 %  
Primed Shells and Bullets. 15 & 5 @ 25 %  
Rim Fire Cartridges. 15 & 5 @ 25 %  
Rim Fire Military. 15 & 5 @ 25 %

## Carpet Sweepers—

## See Sweepers, Carpet.

## Casters—

Bed. 55 @ 55 & 10 %  
Plate. 60 @ 60 & 10 %  
Shallow Socket. \* Brasses. 60 @ 60 & 10 %  
Deep Socket. 40 & 10 %  
Giant Truck Casters. 35 %  
Gwiner's Common Sense. 45 %  
Gwiner's Hercules. 45 %  
Martin's Patent (Pioneer). 45 & 10 @ 50 & 10 %  
Payson's Anti-friction. 70 @ 70 & 10 %  
Payson's Truck. 60 @ 60 & 10 %  
Socket Truck Casters. 50 @ 50 & 10 %  
Stationary Truck Casters. 50 &

**Chalk Lines—See Lines.**

<b>Checks, Door—</b>	
Unit	50%
<b>Chisels—</b>	
<b>Socket Framing and Firmer</b>	
Mix	
New Haven	
Ohio Tool Co.	75¢10¢75¢10¢10%
P. S. & W.	
Wetherby	
Buck Bros.	30%
Dougllass	75¢75¢25¢
Merrill	60¢10¢60¢10¢25¢
L. & J. White	50¢50¢55¢

<b>Tanged and Miscellaneous</b>	
Buck Bros.	30%
Butchers'	\$4.75¢5.00 to 2
Cold Chisels, fair quality	\$1.14¢15¢
Spear & Jackson's	\$1.25 to 2
Tanged Filmmers	50¢50¢10%

<b>Chucks—</b>	
Beach Pat.	each, \$8.00, 20%
Danbury	each, \$6.00, 30¢30¢5%
Graham Patent	33¢45¢
Morse's Adjustable, each	\$7.00, 20¢20¢5%
Syracuse, Balz Pat.	25%
Skinner's Patent Chucks	33¢45¢
Combination Lathe Chucks	15%
Drill Chucks	33¢45¢
Independent Lathe Chucks	40%
Universal Lathe Chucks	40%
Union Mfg. Co.	40%
Combination	40%
Independent	40%
Universal	40%
Victor	\$8.50, 25%

<b>Churns—</b>	
McDermid Star Barrel Churn, each	6 gal., \$2.60; 10 gal., \$2.75; 15 gal., \$3.00; 20 gal., \$3.25
Tiffin Union, each	5 gal., \$3.25; 7 gal., \$3.75; 10 gal., \$4.25

<b>Clamps—</b>	
Adjustable, Cincinnati	15¢10%
Adjustable, Stearns'	15¢15¢5%
Adjustable, Stearns'	30¢30¢10%
Barnes' Machinists' Clamps	33¢45¢
Cabinet, Sargent's	70¢10%
Carpenter's, Cincinnati	25¢10%
Carriage Makers', P. S. & W. Co.	40¢10%
Carriage Makers', Sargent's	75¢75¢5%
Eberhard Mfg. Co.	40¢5¢40¢10%
R. I. Tool Co.'s Wrought Iron	25%
Saw Clamps, see Vises, Saw Filers'	
Stearns' Adjustable Cabinet and Corner	30¢10%
Warner's	40¢10¢40¢10%

<b>Cleavers, Butchers'—</b>	
Beatty's	40¢40¢5%
Bradley's	35¢30%
Foster Bros.	30%
New Haven Edge Tool Co.'s	40%
Nichols Bros.	40%
P. S. & W.	35¢45¢50%
Schulte, Lohr & Co.	40¢40¢5%
L. & J. White	20¢5%

<b>Clips—</b>	
Baker Axle Clips	25%
Norway, Axle, 1/4 & 5-16	55¢55¢5%
Norway Spring Bar Clips, 5-16	50¢50¢5%
2d grade Norway Axle, 1/4 & 5-16	55¢55%
Steel Fellow Clips	65¢55%
Superior Axle Clips	65¢55¢70%
Wrought Iron Fellow Clips	5¢, 5¢

<b>Cloth and Netting, Wire—</b>	
<b>Cocks—</b>	
<b>Cocks Brass—</b>	
Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.)	
<b>Coffee Mills—See Mills, Coffee.</b>	
<b>Collars Dog—</b>	
Brass, Pope & Stevens' list	
Chapman Mfg. Company, new list	
Embossed, Gilt, Pope & Stevens' list	
30¢11¢	
Leather, Pope & Stevens' list	
Medford Fancy Goods Co.	

<b>Combs Curry—</b>	
American Curry Comb Co.	33¢45¢40%
Fitch's	50¢10¢50¢10¢10%
Gibbs' Magic	50¢, \$2.00
Kohler's Humane	50¢, \$1.75
Kohler's Magic Oscillating	50¢, \$2.00
Rubber, per doz.	\$1.00, 25%

<b>Compasses, Dividers &amp;c—</b>	
Compasses, Callipers, Dividers	
Gemis & Call Co's	
Dividers	
Callipers, Call' Patent Inside	
Callipers, Double	
Callipers, Inside or Outside	
Callipers, Wing	
Compasses	
Excelsior	
Starrett's	
Combination Dividers	
Lock Callipers and Dividers	
Spring Callipers and Dividers	
Stevens & Co.'s	

<b>Coolers, Water—</b>	
B. S. & Co.: 2-gal., \$2.00; 3-gal., \$2.50; 4-gal., \$2.75; 5-gal., \$3.40 each	
<b>Coopers' Tools—</b>	
<b>See Tools, Coopers.</b>	

<b>Cord Sash—</b>	
Braided Crown Drab and Fancy	
B. S. & Co.	
Braided Laid Italian Sash	
Common	
Common Russia Sash	
Egyptian, India Hemp, Braided	
India Cable Laid Sash	
Massachusetts, White	
Ossawaun Mills—	
Braided, Giant, Drab and Fancy	
B. S. & Co.	
Braided, Giant, White	
Patent, good quality	
Patent Russia Sash	
Samson—	
Braided, Drab Cotton	
Braided, Italian Hemp	
Braided, Linen	
Braided, White Cotton	
Semper Idem, Braided, White	
Silver Lake	
A quality, Drab, 55¢	
A quality, White, 60¢	
B quality, Drab, 55¢	
B quality, White, 30¢	
Sylvan Spring, Extra Braided, Drab	
Sylvan Spring, Extra Braided, White	
Tate's Solid Braided	
Economy Drab	
Economy, White	
Hercules, Drab	
Hercules, White	
White Cotton Braided, fair	

<b>Wire Picture—</b>	
Braided or Twisted	
<b>Corkscrews—See Screws, Cork.</b>	
<b>Corn Knives and Cutters—</b>	
<b>See Knives, Corn.</b>	
<b>Crackers, Nut—</b>	
Acme	
Janned, 1/2 gro.	
Nickel Plated, 1/2 gro.	
Blake's Pattern, 1/2 doz.	
Table (H. & B. Mfg. Co.)	
Turner & Seymour Mfg. Co.	

<b>Cradles—</b>	
Grain	
50¢2¢50¢5¢52¢	
<b>Crayons—</b>	
White Crayons, 1/2 gross	
D. M. Steward Mfg. Co.	
Metal Workers', 1/2 gross	
Railroad, 1/2 gross	
Rolling Mill, 1/2 gross	
Soapstone Pencils, 1/2 gross	
See also Chalk	

<b>Creamery Pails—See Pails, Creamery.</b>	
<b>Crow Bars—See Bars, Crow.</b>	
<b>Curry Combs—</b>	
<b>See Combs, Curry.</b>	
<b>Curtain Pins—</b>	
<b>See Pins, Curtain.</b>	

<b>Cutters—Meat—</b>	
American	
Nos. 1 2 3 4 B 5	
Each	
Enterprise	
Nos. 10 12 22 32	
Each	
Dixon's 1/2 doz.	
Nos. 1 2 3 4	
14.00 17.00 19.00 30.00	
Draw Cut, each	
Nos. 1 2 6 8	
Hale's, 1/2 doz.	
Nos. 11 12 13	
27.00 33.00 45.00	
Home No. 1, 1/2 doz.	
Little Giant, 1/2 doz.	
Nos. 305 310 312 320 322	
35.00 48.00 44.00 72.00 98.00	
Miles Challenge, 1/2 doz.	
Nos. 1 2 3	
22.00 30.00 40.00	
Triumph No. 505, 1/2 doz.	
Woodruff's, 1/2 doz.	
Nos. 100 105 110 115	
15.00 18.00	
Beef Shavers (Enterprise)	
Chadborn's Smoked Beef Cutter	
Nos. 1 2 3	
68.00	

<b>Slaw and Kraut—</b>	
Tucker & Dorsey Mfg. Co.	
Kraut Cutters, 1 knife, 1/2 gross	
Slaw Cutters, 2 Knife, 1/2 gross	
<b>Tobacco</b>	
Acme	
All Iron	
Champion	
Nashua Lock Co.'s	
Sargent's	
Wilson's	

<b>Washer—</b>	
Appleton's	
Bonney's	
Cincinnati	
Johnson's	
Penny's	
Smith's Pat.	

<b>Diggers, Post Hole, &amp;c—</b>	
Cronk's Post Bars, 1/2 doz.	
Eureka Diggers	
Fletcher Post Hole Augers	
Gem, Improved 1/2 doz.	
Gibbs' Columba	
Gibbs' Hustler	
Gibbs' Imperial	
Gibbs' National	
Gibbs' Post Hole Digger	
Kohler's Hercules	
Kohler's Invincible	
Kohler's Little Giant	
Kohler's New Champion	
Samson, 1/2 doz.	
Scheidler	
Shimer's Hollow Handle	
Vaughan's Post Hole Auger	

<b>Dividers—See Compasses.</b>	
<b>Dog Collars—See Collars, Dog.</b>	
<b>Door Checks—</b>	
<b>See Checks, Door.</b>	
<b>Door Springs—</b>	
<b>See Springs, Door.</b>	
<b>Drawers.</b>	
Money, 1/2 doz.	
Waddell's Improved, No. 1	
Waddell's Improved, No. 2	
Waddell's Desk and Drawer	
Waddell's Desk and Show case	

<b>Drawing Knives—</b>	
<b>See Knives, Drawing.</b>	
<b>Drills and Drill Stocks—</b>	
Blacksmiths' Self-Feeding, each	
Automatic Boring Tools	
Breast, Bartholomew's	
Breast, Millers Falls	
Breast, P. S. & W.	
Breast, Wilson's	
Chicopee Automatic Drill	
Goodell Automatic Drills	
Ratchet, Curtis & Curtis	
Ratchet, Ingersoll's	
Ratchet, Merrill's	
Ratchet, Moore's Triple Action	
Ratchet, Parker's	
Ratchet, Weston's	
Ratchet, Whitney's	
Whitneys Hand Drill, Plain	
Adjustable	

<b>Twist Drills—</b>	
Cleveland	
Diamond, 1/2 & 3/4	
Graham's Pat. Groove Shank	
Morse	
New Process	
Standard	
Syracuse (Metal list)	

<b>Drill Bits or Bit Stock</b>	
<b>Drills—See Augers and Bits.</b>	
<b>Drill Chucks—See Chucks.</b>	
<b>Dripping Pans—</b>	
<b>See Pans, Dripping.</b>	
<b>Drivers, Screw—</b>	
Allard's Spiral, new list	
Brace Screw Drivers	
Buck Bros.	
Buck Bros.' Screw Driver Bits	
Clark's Pat.	
Cincinnati	
Champion	
Dixson's	
Dougllass Mfg. Co.	
Ellrich's Socket and Ratchet	
Fray's Hol. H. die Sets	
Gay & Parsons	
Goodell's Automatic	
Knaps & Cowles	
No. 1	
No. 2	
No. 3	
Nos. 4 and 00, Acme and Ideal	
Kolb's Common Sense	
Mayhew's Black Handle	
Mayhew's Monarch	
P. S. & W.	
Sargent & Co's	
No. 1, Forged Blade	
No. 20, 40 and 60	
Screw Driver Bits, Parr's	
Screw Driver Bits	
Stanley R. & L. Co's	
No. 44, Varnished Handles	
No. 58	
No. 60	
Syracuse Screw Driver Bits	
C. T. Williamson Fly Novelty Co.	

<b>Egg Beaters—See Beaters, Egg.</b>	
<b>Egg Poachers—</b>	
<b>See Poachers, Egg.</b>	
<b>Electric Bell Sets—</b>	
<b>See Bells, Electric.</b>	
<b>Emery—No. 4 to No. 54 to Flour, CF</b>	
48 gr. 150 gr. F.F.F.	
Kegs, 1/2 doz.	
1/4 doz.	
1/2 doz.	
1/4 doz.	
1/2 doz.	
In case	
10-m cans, less	
than 10	

Ouglass Mfg. Co.....	20&20&10%
Ellich's Socket and Ratchet.....	25&25&10%
Fray's Hol. H'dle Sets...No. 3, \$12.00, 45	
Fray & Parsons .....	35%
Woodell's Automatic.....	50%
Knapp & Cowles .....	
No. 1 .....	60&20&70%
No. 2 .....	60&10&10&70&10%
No. 3 .....	60&5&60&10%
No. 4 and 00, Acme and Ideal.....	50&5&



**Halters—**

Covert's Adj. Rope Halters.....40&25  
Covert's Adj. Web Halters.....35&25  
Covert's Hemp Horse and Cattle Tie.....40&25  
Covert's Jute Cattle Ties.....70&10&25  
Covert's Jute Horse Ties.....70&25  
Covert's Rope, 7-16 in., Jute.....70&25  
Covert's Rope, 1/2 in., Hemp.....60&25  
Covert's Rope, Jute.....60&10&25  
Covert's Saddlery Works Halters.....33&15  
Covert's Saddlery Works Hand Web Halters.....33&15  
Covert's Saddlery Works Horse and Cattle Ties.....33&15

**Hammers—**

**Handled Hammers—**  
Atha Tool Co.....50&10  
Buffalo Hammer Co.....50&10  
Humason & Beckley.....50&10  
Verree.....50&10  
Cheney's Claw.....40&10  
Cheney's Claw & Riveting.....50&25  
C. Hammond.....40&10  
Magnetic Tack, Nos. 1, 2, 3, 1.25, 1.50 & 1.75.....30&10  
Maydole's, list Dec. 1, '85.....25&10  
Peck, Stow & Wilcox.....35&40  
Fayette R. Plumb.....40&10  
Artisans' Choice, A. E. Nall.....40&10  
Horsehoe Turning Hammers.....50  
Regular Y. & P. A. E. Nall.....50  
Other Hammers.....50&10  
Nelson Tool Works.....40&10  
Sargent's.....40&10  
Warner & Nobles, new list.....25&10

**Heavy Hammers and Sledges—**

8 lb and under.....75&15  
8 to 15.....80  
Over 15.....80  
Wilkinson's Smiths.....10&11

**Handcuffs and Leg Irons—**

See Police Goods.

**Handles—**

**Cross-Cut Saw Handles—**  
Atkins', new list.....40  
Champion.....40  
Ely's Perfection.....40  
Sensible.....40

**Iron, Wrought or Cast—**

Barn Door, per doz \$1.40.....10&10  
Bronze Iron Drop Latches, per doz 70¢ net  
Chest and Lifting.....70&70  
Door or Thumb.....0  
Nos.....0 1 2 3 4  
Per doz.....\$0.90 1.00 1.08 1.35 1.50

Jap'd Store Door Handles—Nuts, \$1.02;  
Plate, \$1.10; no plate, \$0.88.....net  
Roggin's Latches.....per doz 30¢ 35¢

**Wood—**

Auger, assorted.....gr 5.00  
Auger, large.....gr 7.00  
File, assorted.....gr 2.75  
Brad A.W.I.....gr 2.00  
Apple Firmer Chisel, ass'd.....gr 5.00  
Apple Firmer Chisel, large.....gr 5.00  
Pickory Firmer Chisel, ass'd.....gr 4.50  
Pickory Firmer Chisel, large.....gr 5.00  
Socket Firmer Chisel, ass'd.....gr 3.00  
Socket Framing Chisel, ass'd.....gr 5.00  
Hammer, Hatchet, Axe, &c.....40&40  
Hoe, Rake, Shovel, &c.....40&40  
Pat. Auger, Douglass.....set \$1.25  
Pat. Auger, Ives.....set \$1.00  
Pat. Auger, Swan's.....set \$1.00  
Saw and Plane.....40&10  
J. B. Smith & Co.'s Pat. File.....50

**Hangers—**

Barn Door, New England.....70&70  
Barn Door, old patterns.....70&70  
Barry.....50  
Best Anti-Friction.....60&10  
Boss.....60&10  
Carrier Steel Anti-Friction.....60&10  
Champion.....60&10  
Chicago Anti-Friction.....60&10  
Climax Anti-Friction.....50  
Cincinnati Nos. 1, 2, 2.25; 3, 2.50; 4, 3.25.....50  
Crescent.....60&10  
Cronk's Patent, Steel Covered.....60&10  
Duplex (Wood Track).....60&10  
Economy.....30  
Hamilton Wrought Steel Track.....50  
Interstate.....60&10  
Kidd's.....50  
Lane's New Standard.....50  
Lane's Parlor.....40  
Lane's Standard.....50  
Lundy, Steel Parlor.....40  
Magic.....45  
Matchless.....50  
Moody.....45  
Moore's Baggage Car Door.....33  
Moore's Elevator.....33  
Moore's Railroad.....50  
Nickel, Steel, Nos. 0, 25; 1, 20; 2, 15.....40  
Orleans Steel.....55  
Paragon Nos. 5, 6, 7 and 8.....20  
Pendulum, Payson's.....40  
Perfection.....50  
Richards.....30  
Samson Steel Anti-Friction.....50  
Star.....40  
Stearns' Anti-Friction.....20  
Stearns' Challenge.....25  
Sterling.....60  
Terry's Ideal.....60  
Terry's Modern.....60  
Terry's Shield.....60  
Terry's Solid.....60  
Terry's Wrought Single Strap.....60  
Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.....60  
Warner's Pat.....20  
Wild West.....45  
Zenith for Wood Track.....50

**Harness Snaps—See Snaps.****Hatchets—**

American Axe and Tool Co.....40 & 10  
Blood's.....40 & 10  
Hunt's.....40 & 10  
Hurd's.....40 & 10  
Mann's.....40 & 10  
Peck's.....40 & 10  
Underhill's.....40 & 10  
C. Hammond & Son.....10  
Fayette R. Plumb.....10  
Collins.....10  
Buffalo Hammer Co.....10  
Kelly's.....50 @ 50  
P. S. & W. Co.....50 @ 50  
Sargent's & Co.....50 @ 50  
Schulte, Lohr & Co.....50 @ 50  
Ten Ryck Edge Tool Co.....50 @ 50

**Hay and Straw Knives**

See Knives.

**Hinges—****Blind Hinges—**

Clark's  
Nos. 1, 3, 5, 1888, Old Pattern.....75&10  
Nos. 1 and 3, Tip Pattern.....75&10  
No. 50, Buffalo Noiseless, 40, 60 and 65.....75  
Buffalo Reversible, Nos. 3, 2, 1, 1 and 0.....70  
1, Cottage, for wood only.....80  
No. 1, Diamond, for wood only.....80  
Dixie L. & P., Nos. 3, 2, 1, 1, 0, 0, 4 and 5.....75  
No. 25, Empire Reversible.....75  
Lull & Porter, Nos. 3, 2, 1, 1, 0, 0, 4 and 5.....75  
Morris Gravity, Nos. 2, 4, 4, 6, 8, 9 and 10.....50  
Huffer.....50  
Parker.....75  
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....75  
Revere's Gravity.....75  
Sargent's Nos. 1, 3, 5, 11, 12, 13.....75

**Gate Hinges—**

Automatic.....per doz \$12.50, 50¢  
J. B. Smith's Nos. 1, 2, 3.....60  
N. E. Reversible.....per doz \$7.80, 60¢  
N. E. Reversible.....per doz \$5.60, 60¢  
N. Y. State.....per doz \$4.90, 60¢  
Western.....per doz \$4.20, 60¢

**Spring Hinges—**

Acme.....30  
American, Grant and Starr.....25  
Barker's Patent Checking.....25  
Barker's Double Acting.....25  
Bommer's Janned.....35  
Bommer's All other Kinds.....30  
Buckman's.....15  
Champion.....60  
Chicago.....30  
Devco, No. 1.....gr 13.00  
Empire and Crown.....20  
Freepoint.....gr 12.00  
Geer's Spring and Blank Butts.....40  
Hero and Monarch.....50  
Ideal No. 3.....gross \$10.00  
J. G. C. Covered.....gr 8.00  
New Idea Nos. 1 and 10.....gross \$13.00  
New Idea Dbl. Acting.....45  
No. 10 Matchless.....60  
No. 25 Unbreakable.....60  
Oxford.....20  
Rellable.....60  
Royal.....60  
Samson.....60  
Stearns' Noiseless Floor Hinge, set, \$5.00.....20  
Union Mfg. Co.....25  
Union Spring Hinge Co.'s list, March, 1888.....20  
U.S.....25  
Wiles, No. 1, gr 16; No. 2.....13

**Wrought Iron Hinges—**

List February 14, 1891.  
Corrugated Strap and T.....80  
Strap and T.....60  
Plate Hinges, 8, 10 and 12 in.....60  
"Providence" over 12 in.....60  
Rolled Blind Hinges, Nos. 32 and 34.....50  
Rolled Blind Hinges, Nos. 232 and 234.....50  
Rolled Plate.....70  
Rolled Raised.....70  
Screw Hook and Eye.....40  
Screw Hook and Eye.....40  
Screw Hook and Eye.....40  
Strap.....22 to 36 in.....30

**Hoes—**

Am. Axe and Tool Co., S. & O.....60  
Sandusky Tool Co., S. & O. Pat.....60  
Chattanooga Tool Co., S. & O. Pat.....60  
D. & H. Scovill.....40  
Grub.....30  
Lane's Crescent, Planter's Pattern.....45  
Lane's Razor Blade, Scovill Pattern.....30  
Maynard, S. & O. Pat.....45

**Handled—**

Garden, Mortar, &c.....70  
Planter's, Cotton, &c.....70  
Warren Hoe.....60

**Hog Rings and Rings—**

See Rings and Ringers.

**Holisting Apparatus—**

See Machines, Holisting.

**Hollow-Ware—**

See Ware, Hollow.

**Holders—**

Sprengle's Pat.....per doz \$18.....60

**Bit—**

Angular.....per doz \$24.00, 40¢  
Diagonal.....per doz \$24.00, 40¢  
Extension.....40  
Barber's.....per doz \$15.00.....40  
Ives.....per doz \$20.00.....60

**File and Tool—**

Bals Pat.....per doz \$4.00, 25¢  
Nicholson File Holders.....20

**Sash—**

Motley's Adj. Sash, Medium Size.....per doz \$1.20, 40¢

**Hooks—****Cast Iron—**

Bird Cage, Reading.....80  
Bird Cage, Sargent's List.....80  
Cottages, Sargent's list.....55  
Clothes Line, Moore's.....70  
Clothes Line, Reading list.....80  
Coat and Hat, Moore's.....70  
Coat and Hat, Reading.....50  
Coat and Hat, Sargent's list.....55  
Harness, Reading list.....55

**Wire—**

Atlas, Coat and Hat.....65  
Belt.....80  
Handy Coat and Coat.....60  
Indestructible Coat and Hat.....45  
Steady Ceiling Hooks.....60  
Williams' Bird Cage Hooks, List April, 1892.....40  
Wire Coat and Hat, Gem, list April, 1886.....60  
Wire Coat and Hat, Miles, list April, 1886.....60  
Wire Coat and Hat, Standard.....60  
Bright Wire Goods—See Wire.

**Wrought Iron—**

Cotton.....per doz \$1.25  
Cotton Pat. (N. Y. Mallet and Handle).....30  
Tassel and Pictorial, T. & S. Mfg. Co.....50  
Wrought Staples Hooks, &c.....See Wrought Goods.

**Miscellaneous—**

Bush.....55  
Fish Hooks, American.....60  
Grass, No. 2, \$2.00; No. 3, \$2.10; No. 4, \$2.25  
Hooks and Eyes—Brass.....60  
Hooks and Eyes—Malleable Iron.....70  
Noll's Grass.....per doz \$2.25  
Whiffletree—Patent.....65  
Bench Hooks—See Bench Staps.

**Horse Nails—See Nails, Horse****Horse Shoes—**

See Shoes, Horse.

**Hose, Rubber—**

Competition, Fair quality.....75  
Competition, Low Grade.....60  
N. Y. B. & P. Co., Dundee.....60  
N. Y. B. & P. Co., Extra.....40  
N. Y. B. & P. Co., Para.....25  
Standard.....70  
Cotton Garden, 1/2 in., coupled: Fair Quality.....7¢  
Good Quality.....8¢

**Huskies—**

Blair's Adjustable.....gr \$8.00  
Blair's Adjustable Clipper.....gr 7.00  
Hubbard's Solid Steel.....gr 4.50

**Indurated Fiber Ware—**

See Ware, Indurated Fiber.

**Irons, Curling—**

Nicol's Patent Curling Iron Heater, per doz.....\$1.00  
Silver Tipped Grace Darling Curling Iron, per doz.....\$1.00  
No. 65.....\$1.75  
No. 66.....1.50  
No. 67, Mustache.....1.25

**Sad—**

From 4 to 10, at factory.....100  
B. B. Sad Irons.....\$2.30  
Chinese Laundry (N. E. Butt Co.), 8 1/2, 15¢  
Crown Improved.....60  
Ideal Irons, new list.....60  
Mahony's Troy Pol. Irons.....25  
Mrs. Potts' Sad Irons, per set:  
Small lots.....90 85 1.05 95  
National Self-Heating.....30  
New England.....50  
Salamanca Irons.....25  
Self-Heating.....per doz \$8.00  
Sensib. Tailors'.....per doz \$18.00  
Sensible Tail Jan. 91.....50  
Sensible Tailors' Irons.....35

**Soldering—**

Soldering Coppers.....per 19 @ 21¢  
Covert's Adjustable, list Jan. 1, 1886.....35  
Tinker's Dread.....per doz \$1.75; gr 1.18

**Pinking—**

Pinking Irons, per doz., 55¢ 60¢.

**Jack Screws—See Screws.****Jacks, Wagon—**

Daisy.....33  
Lockport.....40  
Victor.....33  
Kettles—  
Brass, Spun, Platin, list Jan. 1, '91.....25  
Brass, Spun, Platin, list Jan. 1, '91.....20  
Stamped Brass Kettles.....21¢  
Enameled and Tea—See Ware, Hollow.

**Keys—**

Lock, Ass'n list Dec. 30, 1886.....65  
Engle, Cabinet, &c.....33  
Hotchkiss' Brass Blanks.....40  
Hotchkiss' Copper and Tinned.....40  
Hotchkiss' Pad. and Cab.....35  
Wollensack Tinned.....50

**Knife Sharpeners—**

See Sharpeners, Knife.

**Knives—**

Ames' Bread Knives, per doz \$1.50, 15¢ 20¢  
Ames' Butcher Knives.....25  
Ames' Shoe Knives.....25  
Foster Bros', Butcher, &c.....40  
Jordan's A.A. Butchers', list.....net  
Moran's Shoe and Bread.....20  
Nichols' Butcher Knives.....40  
Wine's Butcher Knives, list Dec. 8, 1890.....25  
W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.70; 8 in., \$3.80, &c.  
Hay and Straw—See Hay Knives.  
Table and Pocket—See Cutlery.

**Corn—**

Bradley's.....10  
Wadsworth's.....25

**Drawing—**

Mix.....75  
New Haven.....75  
P. S. & W.....75  
Witherby.....25  
Adjustable Handle.....25  
Bradley's.....35  
Douglass.....75  
Merrill.....60  
W. W. Wilson.....15  
L. & J. White.....20  
Wilkinson's Folding.....25

**Hay and Straw—**

Carters Needle.....per doz \$11.00 @ \$11.50  
Heath's.....per doz \$13.00 @ \$13.50  
Lightning from Jobbers.....\$8.50 @ \$7.50  
Noll's Hay.....per doz \$7.00 @ \$8.00  
Wadsworth's.....40¢ 7¢ @ 40¢ 10¢

**Mincing—**

Am. (2d quality), gr. 1 blade, \$7; 2 blades, \$12; 3 blades, \$18.....net  
Buffalo Adjustable.....per doz \$3.00, 33¢  
Knapp & Cowles.....50  
Lothrop's.....20  
Smith's, per doz., Single, \$2; Double \$3.....45

**Knobs—**

Bardley's Wood Door, Shutter &c.....15¢  
Base, Rubber Tip.....70  
Barrage, Jap.....gr 80¢, 60¢ 10¢  
Door, Mineral.....60  
Door, Por. Jap'd.....70  
Door, Por. Nickel.....2.00  
Door, Por. Plated Nickel.....2.00  
Drawer, Porcelain.....60  
Hemlock Door Knobs.....40  
Picture, Hemlock.....35  
Picture, Jap'd.....60  
Picture, Sargent's.....70  
Shutter, Porcelain.....65  
Yale & Towne Wood, list Dec., 1885.....40

**Ladders.**

Davies Extension and Single.....20 & 55

**Ladies—**

Melting, P. S. & W.....35  
Melting, Reading.....35  
Melting, Sargent's.....60  
Melting, Warners.....30

**Lanterns—****Tubular—**

Anti-Friction, with Guard.....per doz \$4.50  
Brass Plated, Sq. Lift, Guard.....per doz \$5.50  
Cotton Plated, Sq. Lift, Guard.....per doz \$5.50  
O. K. with Guard.....per doz \$3.75  
Regular, with Guard.....per doz \$3.50  
Side Lift, with Guard.....per doz \$4.00  
Square Lift, with Guard.....per doz \$4.25

**Bull's Eye Police—**

2 1/2-inch flash light.....per doz \$4.00  
3-inch flash light.....per doz \$4.50  
2 1/2-inch regular.....per doz \$3.60  
3-inch regular.....per doz \$3.90

**Lawn Mowers—**

See Mowers, Lawn.

**Leaders, Cattle—**

Hotchkiss.....30  
Humason, Beckley & Co.'s.....70  
Peck, Stow & W. Co.....80  
Sargent's.....70

**Lemon Squeezers—**

See Squeezers, Lemon.

**Lifters, Transom—**

Beardsley & Mouat, Sure Grip.....50  
Excelsior.....60  
Payson's.....50  
Imperial.....50  
Solid Grip.....60  
Universal.....60  
Reiner's, list Feb. 20, 1891  
Brass, Real Bronze or Nickel Plate.....30  
Bronzed Iron Rods.....60  
Shaw's.....50  
Wollensack's:  
Class 3 and 4, Brass.....50  
Class 3 and 4, Bronzed Iron.....60  
Class 3 and 4, Bronze Metal.....50  
Skylight Lifters.....25

**Lines—**

Chalk.....60  
Cotton and Linen Fish.....50  
Cotton Chalk.....50  
Mason's Colored Cotton.....50  
Mason's Linen, 84 ft., No. 1, \$1.25; No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.....25  
Mason's Linen, No. 3 1/2, \$1.50; No. 4, \$2.00; No. 4 1/2, \$2.50.....25  
Oswann Mills:  
Braided Chalk.....50  
Cotton Clothes Lines.....15  
Solid Braided Ventilator and Mason's Lines.....25  
Twisted Chalk.....60  
Samson Cotton, No. 4, \$2; No. 4 1/2, \$2.50.....10  
Silver Lake, Braided No. 0, \$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50.....25  
Ventilator Cord, Samson Braided, White or Drab Cotton.....per doz \$7.50, 20¢  
Wire Clothes, Nos. 18 19 20 100 ft.....\$3.50 \$3.00 \$2.50

**Links, Open—**

Terry's—per gro:  
Nos.....1 2 3 4  
\$6.00 8.00 12.00 16.00

**Locks, &c.—****Cabinet—**

Eagle, Gaylord Par. } List, March '84, rev.  
ker and Corbin.....Jan. 1, '85, 33¢ & 2¢  
Barnes Mfg. Co.....40  
Deitz, Nos. 36 to 39.....40  
Deitz, Nos. 51 to 63.....40  
Deitz, Nos. 87 to 98.....30  
Champion Night Latches.....40  
Eagle and Corbin Trunk.....25  
Champion Cab. and Combin.....33  
Romer's.....25  
Yale.....net prices

**Door, Locks, Latches, &c.—**

Barnes Mfg. Co.....40  
Britain, Graham & Mathes, list Jan. 1890.....60  
Brooklyn Latches.....50  
Deitz & Key.....30  
Mallory, Wheeler & Co list July, '88.....60



Philo..... } .30&10@30&10&10  
 Sandusky..... }  
 Stanley R. & L. Co..... 50&10  
 L. & I. J. White..... 25%  
**Plates—**  
 Felice..... \$ D 6&60%  
**Pliers and Nippers—**  
 Button's Patent..... 60%  
 Cook's..... 25%  
 Cronk's 5 in. 15.00; 10 in..... 20  
 Cronk's Button Pattern..... 50&10@80%  
 Cronk's Carrier Pliers..... 60@60&5%  
 Eureka Pliers and Nippers..... 40%  
 Gas Pliers..... 60%  
 Gunter's Custom Model Plated..... 60&5%  
 Hall's 2, 3, 4, 5, 6, 7 in..... 40%  
 \$21.00 per doz..... 40%  
 Humason & Beckley Mfg. Co. 50@50&10%  
 Lindsay's Giant..... 33&4%  
 Morrill's Parallel, \$ doz, \$12.00..... 30&5%  
 P., S. & W. Cast Steel..... 50&50&5%  
 P., S. & W. Timmers' Cutting Nippers..... 40%  
 P. and G..... 25%  
 Russell's Parallel..... 25%  
**Plumbs and Levels**  
 Regular List..... 75&10@75&10&10%  
 Cook's..... 40&10%  
 Davis Inclinoimeters..... 10&10%  
 Davis Iron Levels..... 30%  
 Diston's..... 50%  
 Pocket Levels..... 70&10@70&10&10%  
 Stanley's Duplex..... 20&10%  
 Stanley's Handy..... 20&10%  
**Poachers, Egg—**  
 Buffalo Steam Egg Poachers, \$ doz.....  
 No. 1, \$6.00; No. 2, \$9.00..... 33&4%  
 Silver & Co., 6-Ring, \$ doz, \$4.00; 3-Ring..... 2.00  
**Pokes, Animal—**  
 Bishop's American..... \$ doz \$2.65  
 Bishop's I. X. L..... \$ doz \$5.75  
 Bishop's Steel Monarch..... \$ doz \$4.50  
 Bishop's Pioneer..... \$ doz \$3.50  
 Bolding..... \$ doz \$8.00  
 Buckner's Single Stale..... \$ doz \$2.75  
 Eagle, Double Stale..... \$ doz \$5.75  
 Eagle, Single Stale..... \$ doz \$3.75  
 Metallic Horse Pokes..... \$ doz \$6.00  
**Police Goods—**  
 Daley's Improved Handcuffs, 2 Hands, Polished, \$ doz, \$48.00; Nickeled, \$57.00; 3 hands, Polished, \$ doz, \$72.00; Nickeled, \$84.00..... 25%  
 J. P. Lovell's Police Goods..... 25%  
 Newhall Ship Chandlery Co., Hand-Tower's, \$15.00 per doz..... 25%  
**Polish—**  
**Metal—**  
 Gaston's Silver Compound..... 33&4%  
 Prestoline..... 30%  
 Prestoline Paste..... 33&4%  
**Stove—**  
 Black Eagle Benzine Paste, 5 and 10 lb cans..... 12&4%  
 Black Flag..... \$ gro \$7.20  
 Black Flag, 5 and 10 lb pails..... \$ 12%  
 Black Flag, liquid, in bottles, \$ gro \$8.00  
 Black Jack Water Paste, 5 and 10 lb cans..... 12&4%  
 Bonnell's Paste Stove Polish, \$ gro \$8.00  
 Boynton's Noon Day..... \$ gro, \$13.00  
 Crown Paste..... \$ gro \$7.20  
 Crown Paste in 5 and 10 lb pails, \$ 12%  
 Diamond O. K. Enamel..... \$ gro \$19.00  
 Diamond Rock Nickel Cleaner..... \$ gro \$10.00  
 Joseph Dixon's..... \$ gro, \$8.00, 10%  
 Dixon's Plumbago..... \$ 8%  
 Fireside..... \$ gro \$2.50  
 Gem..... \$ gro, \$4.50, 10%  
 Gold Medal..... \$ gro, \$8.00, 25%  
 Japanese..... \$ gro \$3.50  
 Jor Black..... \$ gro \$3.50  
 Lustr..... \$ gro \$7.75  
 Nickel Plate Paste..... \$ gro \$8.00  
 Parlor Pride Stove Enamel, \$ gro, Raven Liquid, 6 oz. bottles..... \$ gro \$8.00  
 Raven Liquid, 8 oz. bottles..... \$ gro \$9.00  
 Raven Paste in 5 lb. pails (cases of 6 pails), \$ 10%  
 Raven Water Polish, large boxes..... \$ gro \$7.20  
 Rising Sun, 5 gro lots..... \$ gro, \$5.50  
 Ruby..... \$ gro, \$3.75  
 Yates' Liquid, 2 gro 10 gal..... \$ gal, \$0.80 70 50 10 gal \$ 12&4%  
 Yates Standard Paste Polish, 10 lb cans, \$ 12&4%  
**Poppers, Corn—**  
 Round or Square, 1 qt..... \$ doz \$1.00; \$ gr \$8.00  
 1 1/2 qt..... \$ doz \$1.00; \$ gr \$9.00  
 2 qt..... \$ doz \$1.50; \$ gr \$14.00  
**Post Hole and Tree Augers and Diggers—**  
 See *Diggers, Post Hole, &c.*  
**Potato Parers—**  
 See *Parers, Potato.*  
**Pots—**  
**Glue—**  
 Enamelled..... 40&10@40&10&5%  
 Family, Howe's "Eureka"..... 40%  
 Family, L. F. C.'s "Handv"..... 50%  
 Tinned..... 40&10@40&10&5%  
**Powder—**  
**In Canisters—**  
 Duck, 1 lb each..... 45%  
 Fine Sporting, 1 lb each..... 75%  
 Rifle, 1/2 lb each..... 15%  
 Rifle, 1 lb each..... 25%  
**In Kegs—**  
 Duck, 6 1/2 lbs kegs..... \$3.25  
 Duck, 12 1/2 lb kegs..... \$4.25  
 Duck, 25 lb kegs..... \$9.00  
 Rifle, 12 1/2 lb kegs..... \$1.00  
 Rifle, 25 lb kegs..... \$3.25  
**Presses—**  
**Fruit and Jelly—**  
 Enterprise Mfg. Co..... 25%  
 Genis..... \$ doz \$3.50  
 Shepard's Queen City..... 40%  
 Silver & Co..... \$ doz \$2.75  
**Pruning Hooks and Shears—**  
 See *Shears.*

**Pullers Nail—**

Ellipse..... doz., \$24.00, 40%  
 Economy..... doz., \$8.00  
 Giant, No. 1..... doz., \$18.00, 10%  
 Giant, No. 2..... doz., \$15.00, 10%  
 Pelican..... doz., \$9.00, 25%  
 Seranton..... doz., \$18.00, 38%

**Pulleys—**

Brass Screw..... 70%  
 Hay Fork, "Anti-Friction," 5 in. solid..... 50%  
 Hay Fork, "F" Common and Patent..... 20%  
 Hay Fork, Moore's Anti-Friction 5 in. Wheel..... doz., \$12.00, 50%  
 Hay Fork, Reed's Self-Lubricating..... 60%  
 Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50..... 50% to 60% and 10% to 20%  
 Hay Fork, Tarbox Pat. Iron..... 20%  
 Hot House, Awning, 6 in..... 60% to 70%  
 Japanned Clothes Line..... 60% to 80%  
 Japanned Sewing..... 60% to 80%  
 Moore's Ceiling or End, Anti-Friction..... 40%  
 Moore's Dumb Water, Anti-Friction..... 60%  
 Moore's Electric Light..... 33% to 40%  
 Moore's Side, Anti-Friction..... 60%  
 Sash (Auger Mortise)..... 60%  
 Common Sense..... 60%  
 Empire..... 30% less 1¢  
 Ideal, Nos. 2, 4, 10 & 15..... doz. net.  
 Star..... 22%  
 On bbl. lots extra 5%  
 Shade Rack..... 45%  
 Shepard's Niagara, No. 25..... doz 23¢ net  
 Tackle Blocks—See Blocks.

**Pumps—**

Cistern, Best Makers..... 60% to 80%  
 Pitcher Spout, Best Makers..... 75% to 70%  
 Pitcher Spout, Cheaper G'ds..... 75% to 70%  
 Myers' Pumps, low list..... 60%

**Punches—**

Avery's Revolving..... 40%  
 Avery's Sawset and Punch—See Sawsets  
 Bemis & Call Co.'s Cast Steel Drive..... 50% to 55%  
 Bemis & Call Co.'s Check..... 55%  
 Bemis & Call Co.'s Spring..... 50% to 55%  
 Bemis & Call Co.'s Springfield Socket..... 55%  
 Niagara Hollow Punches..... 20% to 25%  
 Niagara Solid Punches..... 55%  
 Rice Hand Punches..... 15%  
 Saddle's or Drive, good..... doz., 60% to 65%  
 Spring, good quality..... doz., \$2.50 to \$2.60  
 Spring, Leach's Pat..... 15%  
 Solid Tinnings, P., S. & W. Co., doz..... \$1.44  
 Tinnings' Hollow Punches, P., S. & W. Co..... 20% to 22%

**Rail—**

Barn Door, Light..... In. 3/4 3/8 3/16  
 Per 100 feet..... \$2.00 2.50 3.10, 10%  
 B.D. for N. E. Hangers..... Small. Med. Large.  
 Per 100 feet..... \$3.15 2.70 3.25 Net  
 Carrier, double braced, Steel Rail..... 3¢  
 Foot..... 3¢  
 Lundy Parlor Door, Painted Edge..... \$1.75  
 Moody Steel Rail..... \$1.65  
 Moore's Steel Rail..... 25% to 30%  
 Sliding Door, Bronzed Wrt Iron..... \$1.75  
 Sliding Door, Iron, Painted..... \$1.45  
 Sliding Door, Wrt Brass..... \$1.45  
 Terry's Steel Rail..... \$1.45  
 Victor Track Rail, 7 1/2 in. foot..... 50% to 55%

**Rakes—**

Cast Steel, Association & ds..... 70% to 75% and 2%  
 Cast Steel, outside g'ds..... 70% to 75% and 2%  
 Malleable..... 3¢  
 Fort Madison Rake, Horse Brace and Peerless..... 65%  
 Fort Madison Steel Tooth Lawn Rake, \$6.00..... 25%  
 The Gibbs..... doz., \$4.80  
 Gibbs' Acme Lawn Rake..... doz., \$4.75  
 Gibbs' Canton Lawn Rake..... doz., \$3.75  
 Gibbs' Crown Lawn Rake, No. 1..... doz., \$4.90; No. 2, \$5.30  
 Gibbs' Favorite Lawn Rake..... doz., \$3.90  
 Gibbs' Hustler No. 0..... doz., \$4.25  
 Gibbs' Hustler No. 1..... doz., \$4.40  
 Oneida Lawn Rake..... doz., \$6.00

**Razors—**

Campbell Cutlery Co..... 50%  
 Electric Cutlery Co..... Net prices  
 Galvanic..... doz., \$15.00  
 Jordan's AAA, new list..... Net prices  
 Jordan's Old Pattern, new list..... Net prices  
 R. Torrey Razor Co..... Net prices  
 Wostenholm and Butcher, \$10 to 2..... 10%

**Razor Stropps—**

See Stropps, Razor.

**Registers—**

Moore's Bronze Finishes..... 70%  
 Moore's Electroplated..... 75%  
 Moore's Japanned..... 70%  
 Moore's Solid Bronze..... 65%  
 Moore's Stove Pipe..... 33%

**Rings and Ringers—**

**Bull Rings—**  
 Ellrich Hdw. Co., White Metal, low list..... 50% to 60%  
 Hotchkiss' low list..... 30%  
 Humason, Beckley & Co.'s..... 70% to 80%  
 Peck, Stow & W. Co.'s..... 50% to 60% and 10% to 10%  
 Sargent's..... 75% to 80%  
 Union Nut Co..... 65%

**Hog Rings and Ringers—**

Blair's Hog Ringers..... doz 2.00  
 Blair's Hog Ringers..... doz 90¢ to \$1.00  
 Brown's Ringers..... doz 2.00  
 Brown's Ringers..... doz \$1.15 to \$1.25  
 Champion Ringers..... doz 2.00  
 Champion Ringers..... doz \$2.25  
 Electric Hog Ringers..... doz 1.00  
 Electric Hog Ringers..... doz boxes \$1.50  
 Hill's Improved Ringers..... doz \$1.25  
 Hill's Old Style Ringers..... doz \$1.15  
 Hill's Ringers..... doz bxs \$1.00  
 Hill's Tongs..... doz \$3.00  
 Major Ringers..... doz \$1.25  
 Major Ringers..... doz \$1.25  
 Perfect Ringers..... doz \$2.15 to \$2.25  
 Perfect Ringers..... doz bxs \$1.50  
 Top of the Hill Ringers..... doz 2.00  
 Top of the Hill Ringers..... doz \$1.25

**Rivets and Burrs—**

Norway Iron, list Nov. 17, '87..... 60% to 10%  
 Second quality..... 70%  
 Copper..... 60% to 80%  
 Coppered Iron, Betina Brand..... 50% to 55%

**Rivet Sets—See Sets.****Roasting and Baking Pans—See Pans, Roasting and Baking.****Rods—**

Stair, Black Walnut..... doz 40%  
 Stair, Brass..... 25% to 30%

**Rollers—**

Acme Moore's Anti-Friction..... 55%  
 Barn Door, Sargent's list..... 60% to 80%  
 Moore's Barn Door Stay..... 50%  
 Union Barn Door Roller..... 70%  
 Thompson Mfg. Co.'s Lawn Rollers..... 30%

**Rope—**The following prices are f.o.b. New York or factory, and are shaded 1/4¢ to 1/2¢ on large lots; terms, 1 1/4% for cash.  
 Manila, 7-16 in. diam. and larger..... 7 1/4¢ to 8 1/4¢  
 Manila, 1/4 and 5-16 in. diam..... 8 1/4¢ to 9 1/4¢  
 Manila, 1/4 and 5-16 in. diam..... 7 1/4¢ to 7 3/4¢  
 Manila, Hay Rope, Med'm..... 7 1/4¢ to 7 3/4¢  
 Sisal, 7-16 in. and larger..... 5 1/4¢ to 5 3/4¢  
 Sisal, 3/4 in. diam..... 7 1/4¢ to 7 3/4¢  
 Sisal, 1/4 and 5-16 in. diam..... 6 1/4¢ to 6 3/4¢  
 Sisal, Hay Rope..... 5 1/4¢ to 5 3/4¢  
 Sisal, Tarred Rope..... 5 1/4¢ to 5 3/4¢  
 Sisal, Medium Lath Yarn..... 5 1/4¢ to 5 3/4¢  
 New Zealand..... 7-16 in. and larger..... 5 1/4¢ to 5 3/4¢  
 New Zealand..... 3/4 inch..... 5 1/4¢ to 5 3/4¢  
 New Zealand..... 1/4 and 5-16 in. diam..... 5 1/4¢ to 5 3/4¢  
 New Zealand, Hay Rope..... 5 1/4¢ to 5 3/4¢  
 New Zealand, Tarred Rope..... 5 1/4¢ to 5 3/4¢  
 Cotton Rope..... 13¢ to 16¢  
 Jute Rope..... 6¢ to 7¢

**Wire—**

List February, 1892. All kinds..... 45%

**Rules—**

Boxwood..... 80% to 10% and 80% to 10%  
 Ivory..... 60% to 80%  
 Starrett's Steel Rules and Straight Edges..... 25% to 10%

**Sad Irons—See Irons, Sad.****Sand and Emery Paper and Cloth—**

See Paper and Cloth.

**Sash Cord—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.****Saws—**

Note.—Extra 5¢ to 10% often given.

Atkins' Circular..... 50% to 10%  
 Atkins' Cross Cuts, new list..... 40%  
 Atkins' Mulay, Mill and Drag..... 50% to 10%  
 Atkins' One-Man Saw..... 40%  
 Atkins' Wood Saws..... 45% to 45%  
 Dicks' Circular..... 45% to 45%  
 Diston's Cross Cut, list Jan. 1, '93..... 40% to 10%  
 Diston's Hand..... 25%  
 C. E. Jennings & Co.'s..... 25%  
 Peace Circular and Mill..... 45% to 45%  
 Peace Cross Cuts, list Jan. 1, '93..... 45% to 10%  
 Peace Hand, Panel and Rip..... 25% to 25%  
 Richardson's Circular and Mill..... 45% to 45%  
 Richardson's X Cuts, list Jan. 1, '93..... 25% to 25%  
 Richardson's Hand, &c..... 25% to 25%  
 Simonds' Circular Saws..... 45% to 45%  
 Simonds' Crescent Ground Cross Cut Saws..... 30%  
 Simonds' Gang, Mill, Mulay and Drag..... 45% to 45%  
 Wheeler, Madden & Clemson Mfg. Co. Cross Cuts, list Jan. 1, 1893..... 45% to 10%  
 Hand, Panel and Rip..... 30% to 10%  
 Woodrough & McParlin..... 45% to 10%  
 Cross Cuts, list Jan. 1, 1893..... 45% to 10%  
 Hand, Panel and Rip..... 25% to 10%

**Hack Saws—**

Eureka and Crescent..... 25%  
 Griffin's, complete..... 40% to 10%  
 Griffin's Hack Saw Blades..... 40% to 10%  
 Star Hack Saws and Blades..... 25%

**Scroll—**

Barnes' Builders' and Cab Makers'..... \$15.25 to 25%  
 Barnes' Scroll Saw Blades..... 35%  
 Lester, complete, \$10.00..... 25%  
 Rogers, complete, \$4.00..... 25%

**Saw Frames—**

See Frames, Saw.

**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Scales—**

Chatillon's Eureka..... 25%  
 Chatillon's Favorite..... 40%  
 Chatillon's Grocers' Trip Scales..... 50%  
 Family, Turnbills..... 80% to 10%  
 Hatch, Counter, No. 171, good quality..... doz \$18.00 to \$19.00  
 Hatch, Tea, No. 101..... doz \$6.50 to \$7.00  
 Platform..... \$2.10 to \$2.20  
 Union Platform, Plain..... \$2.40 to \$2.50

**Scale Beams—**

See Beams, Scale.

**Scissors, Fluting—45%****Scrapers—**

Adjustable Box Scraper (S. R. & L. Co.)..... \$8.00, 40%  
 Box, 1 Handle..... doz \$2.00  
 Box, 2 Handle..... doz \$3.00 to \$4.00  
 Deane Box and Ship..... 20% to 10%  
 Foot..... 50% to 80%  
 Ship, Common..... doz \$3.50  
 Ship, R. I. Tool Co..... 10%

**Screen Window and Door**

Frames—See Frames

**Screw Drivers—**

See Drivers, Screw

**Screws—****Bench and Hand—**

Bench, Iron..... 55% to 10% and 10% to 10%  
 Bench, Wood, Hickory..... doz \$2.25  
 Bench, Wood, Beech..... 20% to 10%  
 Hand, Wood..... 25% to 25% and 10% to 10%  
 Hand, Grand Rapids, list..... 35%

**Coach, Lag and Hand-Rail—**

Lag, Blunt Point, list Jan. 1, 1890..... 80% to 10% and 25% to 25%  
 Coach and Lag, Gimlet Point, list Jan. 1, 1890..... 80% to 10% and 20% to 20%  
 Hand Rail, Am. Screw Co..... 75%  
 Hand Rail, H. & B. Mfg. Co..... 70% to 10% and 75% to 75%  
 Hand Rail, Sargent's..... 70% to 10%

**Jack Screws—**

Jack Screws, Millers Falls list..... 50% to 50% and 10% to 10%  
 Jack Screws, P., S. & W..... 35%  
 Jack Screws, Sargent..... 70%  
 Jack Screws, Stearns..... 40% to 40% and 10% to 10%

**Cork—**

Detroit Cork Screw Co..... 33% to 33%  
 Humason & Beckley Mfg. Co. 40% to 10% and 60% to 60%  
 Williamson's..... 33% to 33% and 25% to 25%  
 Williamson's Forged Worm, Apple-Patent Roller..... doz., \$5.00; Rosewood, \$5.50..... 40%

**Machine—**

Flat Head Iron..... 65%  
 Round Head Iron..... 60%

**Wood—**

List January 1, 1891.  
 Flat Head Iron..... 70%  
 Flat Head Iron..... 70%  
 Flat Head Iron..... 70%  
 Round Head Brass..... 65%  
 Flat Head Bronze..... 70%  
 Round Head, Bronze..... 65%  
 Rogers' Drive Screws..... 82% to 4%

**Scroll Saws—See Saws, Scroll.****Scythes—**

Grain..... 40% to 5% and 40% to 10%  
 Grass..... 40% to 10% and 50% to 50%

**Scythe Snaths—**

See Snaths, Scythe.

**Sets—**

**Awl and Tool—**  
 Aiken's Sets, Awls and Tools, No. 20, \$10.00..... 60% to 60% and 5% to 5%  
 Common Brad Sets, No. 42, \$10.50; No. 43, \$12.50..... 70% to 10% and 5% to 5%  
 Fray's Adj. Tool Bldgs., Nos. 1, \$12; 2, \$18; 3, \$12; 4, \$9..... 45%  
 Henry's Combination Haft..... doz \$6.50  
 Millers Falls Adj. Tool Bldgs., No. 1, \$12; No. 4, \$12; No. 5, \$18..... 25%  
 Stanley's Excelsior..... No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50..... 30% to 10%

**Nail—**

Round..... gr. \$3.25  
 Square..... gr. \$4.00 to \$4.25  
 Buck Bros..... 27%  
 Cannon's Diamond Point..... gr. \$12, 20%

**Rivet—**

Regular list..... 70%

**Saw—**

Atkin's Criterion..... doz No. 1, \$6.00  
 Aiken's Genuine..... \$13.00, 50% to 10% and 60% to 60%  
 Aiken's Imitation..... doz \$3.00 to \$3.25  
 Atkin's Lever..... doz No. 1, \$6.00  
 Avery's Saw Set and Punch..... 50%  
 Bemis & Call Co.'s Cross Cut..... 30% to 5%  
 Bemis & Call Co.'s Plate..... 30%  
 Bemis & Call Spring Hammer..... 30% to 5%  
 Common Lever..... doz \$2.00, 45% to 60%  
 Crescent..... doz \$3.00  
 Croissant (Keller), No. 1, \$15.00; No. 2, \$24.00..... 40% to 10% and 60% to 60%  
 Diston's Star..... 25%  
 Hammer, Bemis & Call Co.'s new Pat. 45%  
 Hammer, Hotchkiss..... \$5.50, 10%  
 Hart's Pat. Lever..... 20%  
 Kohler's Giant Royal..... doz \$12.00  
 Kohler's Royal..... doz \$7.00  
 Leopold..... \$15.00, 15% to 20%  
 Lloyd's Acme Co.'s Plate..... \$15.00, 40% to 10%  
 Morrill's No. 1, \$15.00..... 40% to 20%  
 Nos. 3 and 4, Cross Cut, \$23.00..... 40% to 20%  
 No. 5, Mill, \$31.00..... 40% to 20%  
 No. 10, \$15.00..... 40% to 20%  
 No. 11, \$16.00..... 40% to 20%  
 Nash's..... \$15.00, 40% to 20%  
 Stillman's Genuine..... doz \$5.00 to \$7.50, 40% to 5%  
 Stillman's Pattern, Hand, \$3.25; Cross Cut, \$6.50..... 55% to 55% and 10% to 10%  
 Taintor Positive..... doz \$18, 60%

**Sharpeners, Knife—**

Larkins'..... \$15.00, 40%  
 Appledwood Handles..... doz \$6.00, 40%  
 Rosewood or Cocobola..... doz \$9.00, 40%

**Shaves, Spoke—**

Iron..... 45%  
 Wood..... 30%  
 Bailey's (Stanley R. & L. Co.)..... 50% to 10%  
 Cincinnati..... 25% to 10%  
 Goodell's \$9.00..... 25%  
 Stearns'..... 30% to 10%

**Shears—**

Acme Cast Shears..... 10% to 10%  
 American (Cast) Iron..... 75% to 10% and 75% to 10%  
 Cast Steel's Lamp Trimmers..... doz \$3.75  
 Cast Steel Trimmers..... 10% to 10%  
 First quality..... 80% to 80% and 10% to 10%  
 Second quality..... 80% to 80% and 10% to 10%  
 Campbell Cutlery Co., Jap'a..... 75%  
 Nickel Plated..... 65%  
 Cuss and Randall..... 80% to 80%  
 Cuss brand, Nickeled, same list..... 60%  
 Clipper..... 10% to 10%  
 Davenport Cutlery Co..... 60% to 60% and 10% to 10%  
 Diamond Cast Shears..... 10%  
 Electric Cutlery Co..... Net  
 Galvanic 3/4 to 9 in..... doz \$1.00, 1¢ inch  
 Hamilton Cutlery Co., Solid Steel Forged..... 60%  
 Heinich's, List Dec. 1881..... 60% to 10% and 60% to 10% and 10% to 10%  
 Heinich's Tailor's Shears..... 33% to 33%  
 Howe Bros. & Hubert, Solid Forged Steel..... 40%  
 Seymour's, List Dec. 1881..... 60% to 10% and 60% to 10% and 10% to 10%  
 Victor Cast Shears..... 75% to 10% and 75% to 10% and 10% to 10%

**Tinners' Snips—**

Cast Handles, Laid with Steel..... 40%  
 Niagara Snips and Shears..... 20% to 10%  
 Wrt. Handles, Steel Blades..... 20% to 10%

**Pruning Shears and Hook**

Diston's Combined Pruning Hook and Saw..... doz \$13.00, 20% to 10%  
 Diston's Pruning Hook, \$12.00..... 20% to 10%  
 Dunlap's Saw and Chisel, \$8.50, 50%  
 Henry's Pruning Shears, \$4.25..... \$4.50

E.S. Lee & Co.'s Pruning Tools..... 50% to 10% and 70% to 70%  
 Levin Pruner No. 1, \$15.00, \$10.00, 40% to 40%  
 Levin Pruner No. 2, \$21.00, \$10.00, 40% to 40%  
 J. Mallinson & Co., No. 1, \$5.25; No. 2, \$7.25  
 Pruning Shears, Henry's Pat..... \$3.50 to \$4.00  
 P. S. & W. Co..... 60%  
 Wheeler, M. & C. Co., Combination..... doz \$12.00

**Tinners', &c.—**

Shears and Snips (P. S. & W.)..... 20% to 25%  
 Snips, J. Mallinson & Co..... 33%

**Sheaves—****Sliding Door—**

Corbin's list..... 60% to 10% and 2% to 2%  
 M. W. Co., list July, 1888..... 50% to 10% and 60% to 60%  
 Moore's Anti-Friction..... 60%  
 Patent Roller..... 60% to 10% and 2% to 2%  
 Patent Roller, Hatfield's..... 75%  
 R. & E., list Dec. 18, 1885..... 55% to 20%  
 Russell's Anti-Friction, list Dec. 18, 1885..... 60% to 2%

**Sliding Shutter—**

Reading list..... 60% to 10% and 10% to 10%  
 R. & E., list Dec. 18, 1885..... 60% to 10% and 2% to 2%  
 Sargent's list..... 70%

**Shells—**

Brass Shot Shells, Club, Rival, Climax..... 65% to 2%  
 Brass Shot Shells, 1st quality..... 60% to 2%  
 First quality 4, 8, 10 and 12 gauge..... 25% to 10% and 2% to 2%  
 First quality Rival, Club and Climax brands, 14, 16 and 20 gauge (\$7.50 list)..... 20% to 10% and 2% to 2%  
 Prize..... 40% to 2%  
 Seibold's Comb. Shot Shells..... 15% to 2%  
 Smokeless brand, 12, 10, 16 gauge..... 35% to 10% and 2% to 2%  
 Star, Club, Rival and Climax Brands..... 35% to 10% and 2% to 2%  
 Trap brand, 12 and 10 gauge..... 35% to 10% and 2% to 2%

**Shells, Loaded—**

Standard list, July 19, 1890..... 40% to 10% and 40% to 10% and 10% to 10%  
 7¢ cash, 10 days.

**Ship Tools—**

L. & I. J. White..... 20% to 5%

**Shoes, Horse, Mule, &c. Horse—**

Burden's, Perkins', Phoenix, Standard, Diamond State, Brydens' Rose and Crescent..... \$3.50 to \$4.00  
 Bryden's Frog Pressure, at factory, \$5.00

**Mule—**

Add \$1 keg to above prices.

**Ox Wrought—**

Ton lots..... \$10.00, 10%  
 1000 lb lots..... \$10.00, 10%  
 500 lb lots..... \$10.00, 10%

**Shot—**

Drop, up to B, 25-b bag..... \$1.20  
 Drop, up to B, 5-b bag..... 35¢  
 Drop, B and larger, 25-b bag..... 1.45  
 Drop, B and larger, 5-b bag..... 1.40  
 Buck and Chilled, 25-b bag..... 1.45  
 Buck and Chilled, 5-b bag..... 4.00  
 Dust Shot, 25-b bag..... 2.00  
 Dust Shot 5-b bag..... 4.50

**Shovels and Spades</**

<b>Snaps, Harness, &amp;c.</b>		<b>Twine</b>	
Anchor (T. & S. Mfg. Co.)	50¢	Flax Twine	BC. B.
Fitch's (Bristol)	50¢10¢	No. 2, 1 and 1/2 B. Balls	25¢ 31¢
Hotchkiss	50¢10¢	No. 12, 1 and 1/2 B. Balls	25¢ 30¢
Andrews	50¢	No. 18, 1 and 1/2 B. Balls	25¢ 29¢
Bargent's Patent Guarded	70¢10¢10¢	No. 24, 1 and 1/2 B. Balls	25¢ 29¢
German, new list	40¢10¢	No. 30, 1 and 1/2 B. Balls	18¢ 28¢
Covert	50¢10¢5¢2¢	No. 36, 1 and 1/2 B. Balls	18¢ 28¢
Covert, New Patent	50¢10¢5¢2¢	No. 42, 1 and 1/2 B. Balls	18¢ 28¢
Covert, New R. E.	50¢10¢5¢2¢	Chalk Line, Cotton, 1/2 B. Balls	25¢
Covered Spring	50¢10¢10¢	Mason Line, Linen, 1/2 B. Balls	55¢
Covert's Saddle Works' Triumph	35¢	2-Ply Hemp, 1/2 and 1/2 B. Balls (Spring	15¢
John Protz Snaps	7¢7¢7¢5¢	Twine)	15¢
Kelley & Woolworth's Steel Harness	50¢10¢60¢	3-Ply Hemp, 1 B. Balls	16¢10¢15¢
		8-Ply Hemp, 1 1/2 B. Balls	15¢10¢15¢
<b>Snaths</b>		Cotton Wrapping, 5 Balls to a 15¢10¢	
Scythe	50¢2¢50¢5¢2¢	2, 3, 4 and 5 Ply Jute, 1/2 B. Balls	10¢
<b>Soldering Irons</b>		Wool	13¢10¢
See Irons, Soldering		Paper	13¢10¢
<b>Spittoons, Cuspidors, &amp;c.</b>		Cotton Mops, 6, 9, 12 and 16 to do 18¢	
Standard Fiberglass		<b>Vises</b>	
Cuspidors, 8-1/2 inch, # doz., No. 5, \$8	5¢, \$9	Solid Box	50¢10¢60¢
Spittoons, Daisley, 8-inch, No. 1, 1; 10 and 11 inch, \$6		<b>Parallel</b>	
<b>Spoke Shaves</b>		Fisher & Norris Double Screw	15¢10¢
See Shaves, Spoke		Stephens'	25¢30¢
<b>Spoke Trimmers</b>		Parker's	20¢25¢
See Trimmers, Spoke		Wilson's	55¢
<b>Spoons and Forks</b>		Howard's	40¢
Tinned Iron		Bonney's	40¢40¢50¢
Basting, Cen. Stamp, Co.'s list	70¢10¢	Miller's Forks	40¢40¢10¢
Solid Table and Tea, Cen. Stamp, Co.'s list	70¢10¢	Trenton	40¢5¢40¢10¢
Buffalo, S. S. & Co.	35¢42¢	Merrill's	15¢20¢
<b>Silver Plated</b>		Holland's	35¢40¢
4 months or 6¢ cash 30 days		Sargent's	70¢10¢
Meriden Brit. Co., Rogers	40¢15¢	Backus and Union	40¢
Rogers & Hamilton	40¢15¢	Double Screw Leg	15¢10¢
O. Rogers & Bros.	40¢15¢	Prentiss	20¢25¢
Rogers & Bros.	40¢10¢5¢	Simpson's Adjustable	40¢
Reed & Barton	40¢10¢5¢	Moore's	20¢
Wm. Rogers Mfg. Co.	40, 15¢5¢	Massey Quick Action	20¢25¢
Simpson, Hall, Miller & Co.	40, 15¢5¢	<b>Saw Fillers</b>	
Holmes & Edwards Silver Co.	40, 15¢5¢	Bonney's, Nos. 2 & 3, 15¢100	40¢10¢50¢
L. Boardman & Son	50¢12¢5¢	Stearns'	35¢10¢30¢40¢10¢10¢
<b>Miscellaneous</b>		Stearns' Silent Saw Fillers	35¢40¢35¢
Holmes & Edwards Silver Co.	50¢10¢5¢	Hopkins'	¢ doz \$17.50, 10¢
No. 37 Mexican Silver	50¢10¢5¢	Reading	40¢10¢
No. 30 Silver Metal	50¢10¢5¢	Wentworth	15¢10¢
No. 24 German Silver	50¢10¢5¢	Economy, # doz., Nos. 110, \$10.00; 120, \$15.00	40¢10¢50¢
No. 50 Nickel Silver	50¢10¢5¢	<b>Miscellaneous</b>	
No. 49 Nickel Silver	50¢10¢5¢	Phoenix Vises	35¢40¢
Wm. Rogers Mfg. Co.	50¢10¢5¢	Phoenix Hand Vises	¢ doz \$5.60, 35¢
Rogers' Silver Metal	50¢10¢5¢	Cowell Hand Vises	20¢
18¢ Rogers' German Silver	50¢10¢5¢	Bauer's Pipe Vises	10¢
2¢ Rogers' Nickel Silver	50¢10¢5¢	Cincinnati	25¢10¢
Rogers & Hamilton		Enterprise Pipe Vises	each \$3.00, 40¢
Steel Goods	40¢10¢	Massey Combination Pipe Vise	40¢
Cimeter, Flatware	40¢10¢5¢	<b>Wads—Price Per M.</b>	
Cimeter, Steel Goods	40¢10¢	U.M.C. & W.R.A.—B. E., 11 up	68¢
Crown Hamilton, Flatware and Cutlery	30¢	U.M.C. & W.R.A.—B. E., 9 and 10	82¢
German Silver	50¢50¢5¢	U.M.C. & W.R.A.—B. E., 8	96¢
Nickel Silver	50¢50¢10¢5¢ cash	U.M.C. & W.R.A.—B. E., 7	\$1.10
Britannia	60¢60¢50¢	U.M.C. & W.R.A.—P. E., 11 up	1.15
Boardman's Nickel Silver, list July 1	60¢75¢65¢	U.M.C. & W.R.A.—P. E., 9 and 10	1.50
Boardman, Britannia Spoons, case		U.M.C. & W.R.A.—P. E., 8	1.70
Iota	60¢5¢ cash	U.M.C. & W.R.A.—P. E., 7	1.80
<b>Springs</b>		Eley's B. E., 11 and larger	\$1.70 to \$1.75
Torrey's Rod, 38 in.	¢ doz \$1.20, \$1.2	Eley's B. E., 12 to 20	\$3.00 to \$3.25
Warner's No. 1, # doz \$1.50; No. 2, \$3.40		<b>Wagon Boxes</b>	
Gem (Col), list April 19, 1886	20¢10¢	See Boxes, Wagon	
Star (Col), list April 19, 1886	20¢10¢	<b>Wagon Jacks</b>	
Victor (Col)	60¢10¢60¢10¢5¢	See Jacks, Wagon	
Champion (Col)	60¢10¢60¢10¢10¢	<b>Ware, Hollow</b>	
Cowell's, No. 1, # doz \$18.00; No. 2, \$15.00		Cast Iron, Hollow	
Rubber, complete, # doz \$4.50	50¢50¢10¢	Stove Hollow Ware	
Hercules	50¢50¢10¢	Ground	60¢10¢60¢10¢10¢
Phoenix	35¢40¢	Unground	66¢10¢70¢5¢
<b>Marriage, Wagon, &amp;c.</b>		White Enamelled Ware	
Elliptic, Concord, Platform and Half		Maslin Kettles	70¢10¢75¢
Scroll	60¢10¢60¢10¢10¢10¢ or net prices	Boilers and Saucepans	60¢60¢5¢
Cliff's Bolster Springs	25¢	Tinned Boilers and Saucepans	60¢60¢5¢
<b>Squares</b>		Rustless Hollow Ware	50¢50¢5¢
Steel and Iron	80¢10¢10¢80¢25¢	Gray Enamelled Ware	
Nickel Plated	80¢10¢10¢	Stove	50¢
Try Square and T Bevels	60¢10¢10¢	Maslin Kettles	60¢60¢10¢
Diston's Try Square and T Bevels	50¢	Boilers and Saucepans	40¢5¢
Winterbottom's Try and Miter	30¢10¢	<b>Enamelled</b>	
Starrett's Micrometer Caliper Squares	25¢	Agate and Granite Ware	Extra 10¢
Avery's Finish Bevel Squares	50¢	list Jan. 1, 1890	35¢40¢
Avery's Bevel Protractor	50¢	Incroclad Enamelled Ware	on many articles
<b>Squeezers</b>		Ware	¢ doz \$3.10 to \$3.25
Podder		<b>Kettles</b>	
Blair's	¢ doz \$2.00	Galvanized Tea-Kettles	
Blair's "Climax"	¢ doz \$1.25	1/2 inch	6¢
<b>Lemon</b>		Each	5¢5¢ 6¢5¢ 7¢5¢
Porcelain Lined, No. 1	¢ doz \$6.00	<b>Standard Fiber</b>	
Wood, No. 2	¢ doz \$3.00, 35¢	Per Doz.	
Wood, Common	¢ doz \$1.70, 17¢	Plain, Decorated	
Dunlap's Improved	¢ doz \$3.75, 75¢	Wash-Basins, 10 1/2 in.	\$1.80 \$2.00
Sammis, No. 1, \$5.00; No. 2, \$9; 12, \$18		Wash-Basins, 12 in.	2.00 2.50
Jennings' Star	¢ doz \$2.50	Keelers, 1 1/2 in.	3.00
The Boss	¢ doz \$2.50	Cuspidors	7.50
Dean's, No. 1, # doz \$6.50; No. 2, \$1.90; Queen, \$2.50		Spittoons, "Daisy," 8 in.	3.50
Little Giant	80¢50¢25¢	Peck Measure	4.00
King	40¢5¢	See Peck Measure	3.50
Hotchkiss Straight Flash	¢ doz \$12.00	See also Pails	
Silver & Co., Glass	¢ gro. \$9.00	<b>Indurated Fiber</b>	
<b>Standard Fiber Ware</b>		Spittoons, No. 2, # doz	\$6.00
See Ware, Standard Fiber		Basins, Ringed, # doz, No. 2	2.80
<b>Staples</b>		Washbasins, Nested, Nos. 0, 1, 2, and 3 (4 pieces), # nest	5.75
Barbed Blind, 1/4 in. and larger, # doz 7¢7¢4¢		Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), # nest	5.75
Barbed Blind, 1/4 in.	¢ doz \$6.80	Butter Bowls 15, 17 and 19-inch (3 pieces), # nest	1.50
Fence Staples, Galvanized, # as 7¢10¢		Liquid Measures, pt., qt., 2 qt. and funnel (4 pieces), # set	1.20
Fence Staples, Plain	See Trb Rep	See also Pails	
Grand Crossing Tack Co.'s Hat	75¢10¢	<b>Silver Plated, Hollow</b>	
Nichols Bros.	40¢10¢	4 mo. or 5¢ cash in 30 days	
<b>Steelyards</b>		Reed & Barton	
Stocks and Dies		Meriden Britannia Co.	40¢5¢
Blacksmith's		Simpson, Hall, Miller & Co.	40¢5¢
Butterfield's Goods	35¢	Rogers & Brother	
Lightning Screw Plate	25¢30¢	Hartford Silver Plate Co.	40¢5¢5¢
Reece's New Screw Plates	25¢30¢	William Rogers Mfg. Co.	40¢5¢5¢
Reversible Ratchet	30¢	<b>Washers</b>	
Gardner	25¢	Size hole	5-16 3/4 1/2 5/16 to 1 1/4
Green River	25¢30¢	Washers	5¢ 4¢ 3¢ 2¢ 1¢
<b>Staples Bench</b>		In lots less than 2000, # doz, add 1/4¢, 5¢ boxes 1¢ to list	
Morrill's, # doz, No. 1, \$10.00; No. 2, \$11.00		<b>Washer Cutters</b>	
Hotchkiss	¢ doz \$5.10, 10¢10¢10¢	See Cutters, Washers	
Watson's, No. 1, \$10.00; No. 2, \$9.25; 10¢10¢5¢		<b>Water Coolers</b>	
McGill's, # doz \$3.	10¢	See Coolers, Water	
Cincinnati	25¢10¢	<b>Wedges</b>	
Terrell's Nos. 1 and 2, # doz, \$5; No. 3, \$3.60		Iron	¢ doz \$1.20 to \$1.40
		Steel	¢ doz \$1.20 to \$1.40
<b>Staples</b>		<b>Weights, Sash</b>	
Hotchkiss	¢ doz \$5.10, 10¢10¢10¢	Solid Eyes	¢ ton, \$18.00 to \$19.00
Watson's, No. 1, \$10.00; No. 2, \$9.25; 10¢10¢5¢		<b>Well Buckets Galvanized</b>	
McGill's, # doz \$3.	10¢	See Buckets, Well Galvanized	
Cincinnati	25¢10¢	<b>Wheels Well</b>	
Terrell's Nos. 1 and 2, # doz, \$5; No. 3, \$3.60		8 in., \$2.00; 10 in., \$2.50; 12 in., 2.75	

**Whips**

American Whip Co.	Length.	4 1/2	5	5 1/2	6	6 1/2	7	7 1/2	8 ft.
X. L. Whalebone Driving.....	\$18.00	20.00	22.00	24.00	27.00	30.00	35.00	38.00	40.00
Eureka, Two-thirds Whalebone.....		15.00	16.50	18.00	20.00				
Bull Bone, Half-length Whalebone.....									
American Standard.....	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50	
True Grip, Raw Hide Center.....	6.00	6.00	6.50	7.00	7.50	8.00			
New Name Stocked Java, Black and Wine Colors.....									
Americus, 83 Pen Whip.....									
Gents' Light Driving No. 111.....									
Gents' Light Driving No. 103.....									
Hand-made Stocked Java No. 103.....			3.75	4.00					
A large variety of cheaper grades.....									
Team Whips.....									
Toy Whips.....									
Hardware Assortment, 10/American, 75 Whips for \$50.00.									

Ossawann Mills, Brass and Copper on Spools..... 50¢10¢  
 Tate's Spooled, Tin'd & Annealed..... 60¢5¢  
 Tate's Spooled Cop. and Brass..... 50¢  
 Cast Steel Wire..... 60¢  
 Stubby Steel Wire..... \$6.00 to \$8.00  
 Steel Music Wire, 12 to 30, imported..... 60¢70¢  
 Wire Clothes Line, see Lines.  
 Wire Picture Cord, see Cord.

**Bright Wire Goods—**  
 Standard list..... 85¢10¢10¢90¢  
 Wire Cloth and Netting—  
 Painted Screen Cloth 100 ft \$1.45 to \$1.50  
 Galvanized Wire Netting..... 80¢80¢10¢

**Wire Barb—**  
 See Trade Report.  
**Wire Rope—See Rope, Wires.**  
**Wrenches—**

American Adjustable..... 40¢  
 Baxter's Adjustable "S"..... 40¢10¢80¢  
 Baxter's Diagonal..... 50¢  
 Coes' Genuine..... 50¢50¢10¢  
 Coes' "Mechanics"..... 50¢10¢3¢  
 Girard Standard..... 65¢10¢70¢  
 Lamson & Sessions' Engineers..... 60¢10¢  
 Lamson & Sessions' Standard..... 70¢10¢  
 P. S. & W. Agricultural..... 75¢10¢80¢  
 Girard Agricultural..... 75¢10¢80¢  
 Lamson & Sessions' Agric'l..... 75¢10¢80¢  
 W. & B. Diamond..... 75¢10¢80¢

**Bemis & Call's:**  
 Pat. Combination Bright..... 40¢5¢  
 Pat. Combination Black..... 40¢10¢  
 Merrick's Pattern..... 40¢  
 Briggs' Pattern..... 30¢10¢  
 Cylinder or Gas Pipe..... 45¢5¢  
 No. 3 Pipe..... 55¢  
 Aiken's Pocket (Bright)..... \$6.00, 50¢10¢  
 The Favorite Pocket..... \$4.00, 40¢  
 Webster's Pat. Combination..... 25¢  
 Boardman's..... 30¢  
 Always Ready..... 50¢  
 Alligator..... 20¢10¢  
 Donohue's Engineer..... 20¢10¢  
 Eagle..... 50¢10¢  
 Acme, Bright..... 50¢2¢  
 Acme, Nickel..... 40¢2¢  
 Hercules..... 70¢70¢2¢  
 Walker..... 55¢3¢  
 Diamond Steel..... 55¢3¢  
 Cincinnati Brace Wrenches..... 25¢10¢  
 Tafts' Wire Wrench..... 55¢10¢5¢

**Wringers, Clothes—**  
 Am. Wringer Co.'s list, July 1, '93..... 2¢ cash  
 Colby Wringer Co., list Sept. 1, '91..... 2¢ cash  
 Lowell Mfg. Co., list July 1, 1892..... 2¢ cash  
 Peerless Mfg. Co., list Feb., 1892..... 2¢ cash  
 National Wringer & Mfg. Co., list June 1, 1892..... 2¢ cash

**Wrought Goods—**  
 Staples, Hooks, &c., list, March 17, 1892..... 85¢10¢85¢15¢

## Wire and Wire Goods—

### Iron—

**Market,**  
 Br. & Ann., Nos. 0 to 18..... 75¢10¢75¢10¢25¢  
 Cop'd, Nos. 0 to 18..... 70¢5¢70¢5¢  
 Galv., Nos. 0 to 18..... 70¢5¢70¢10¢  
 Tin'd, Tin'd list, Nos. 0 to 18..... 70¢70¢10¢

Stone, Br. and Ann'd,  
 Nos. 18 to 21..... 80¢  
 Nos. 19 to 22..... 80¢5¢  
 Nos. 23 to 26..... 82¢5¢  
 Tinned Broom Wire, 18 to 21, # 10..... 44¢  
 Galvanized Fence..... 75¢10¢  
 Brass, list Jan. 18, 1894..... 40¢5¢  
 Copper, list Jan. 18, 1894..... 40¢5¢  
 Annealed Wire on Spools..... 60¢  
 Malin's Annealed & Tin'd on Spools..... 60¢5¢  
 Malin's Brass and Cop. on Spools..... 50¢5¢  
 Ossawann Mills, Annealed and Tinned on Spools..... 60¢10¢

# Paints, Oils and Colors.—Wholesale Prices.

## Animal and Vegetable Oils—

Linseed, City, raw, per gal.....	47
Linseed, City, boiled.....	50
Linseed, Western, raw.....	47
Lard, City, Extra Winter.....	70
Lard, City, Prime.....	70
Lard, City, Extra No. 1.....	50
Lard, City, No. 1.....	45
Lard, Western, prime.....	70
Cotton-seed, Crude, prime.....	29
Cotton-seed, Crude, off grades.....	25
Cotton-seed, Summer Yellow, prime.....	36
Cotton-seed, Summer Yellow, off grades.....	34
Sperm, Crude.....	65
Sperm, Natural Spring.....	66
Sperm, Bleached Spring.....	71
Sperm, Natural Winter.....	71
Sperm, Bleached Winter.....	76
Whale, Crude.....	45
Whale, Natural Winter.....	45
Whale, Bleached Winter.....	48
Whale, Extra Bleached.....	50
Sea Elephant, Bleached Winter.....	32
Menhaden, Crude, Sound.....	32
Menhaden, Crude, Southern.....	36
Menhaden, Light Pressed.....	41
Menhaden, Bleached W'ter.....	43
Menhaden, Extra Bleached.....	43
Tallow, City, prime.....	48
Tallow, Western, prime.....	48
Cocoanut, Ceylon.....	64
Cod, Domestic.....	38
Cod, Foreign.....	42
Red Elaine.....	35
Red Saponified.....	5
Bank.....	38
Straits.....	58
Olive, Italian, bbls.....	60
Neatsfoot, prime.....	60
Palm, foot, Lagos.....	54

Mineral Oils—	
Black, 29 gravity, 25 to 30 cold test.....	7
Black, 29 gravity, 15 cold test.....	7 1/2
Black, 29 gravity, summer.....	6
Cylinder light, filtered.....	14

Cylinder, dark, filtered.....	10	43
Paraffine, 23 1/2 to 24 gravity.....	11	11
Paraffine, 25 gravity.....	10	12
Paraffine, 28 gravity.....	7 1/2	8
Paraffine, red.....	9 1/2	10 1/2

## Paints and Colors—

Barytes, Foreign, 10 ton.....	\$22.00	\$24.00
Barytes, Amer. floated.....	29.00	32.00
Barytes, Amer. No. 1.....	18.00	21.00
Barytes, Amer. No. 2.....	13.00	15.00
Barytes, Amer. No. 3.....	11.00	12.00
Blue, Celestial.....	6	8
Blue, Chinese.....	40	50
Blue, Prussian.....	25	40
Blue, Ultramarine.....	8	25
Brown, Spanish.....	3 1/2	4
Brown, Vandyke, Amer.....	3	3 1/2
Brown, Vandyke, English.....	6	8
Carmin, No. 40, in bulk.....	2.75	3
Carmin, No. 40, in boxes or barrels.....	2.85	3
Carmin, No. 40, in ounce bottles.....	3.75	4
Chalk, in bulk.....	1.75	2.00
Chalk, in bbls.....	33	40
China Clay, English.....	10	10 1/2
Cobalt Oxide, prep'd.....	9.00	11.00
Cobalt Oxide, black.....	1.90	2.00
Green, Paris, in bulk.....	10	10 1/2
Green, Paris, 170 to 175 lb kegs.....	10 1/2	11
Green, Paris, small pack.....	12	17
Green, Chrom., ordinary.....	6	12
Green, Chrom., pure.....	22	25
Lead, Eng., B.B. white.....	7	8
Lead, Amn. White, dry or in oil.....		
Kegs, lots less than 500 lb.....	6 1/2	6 1/2
Kegs, lots 500 lb to 5 tons.....	6	6
Kegs, lots 5 tons to 12 tons.....	5 1/2	5 1/2
Kegs, lots 12 tons and over.....	5 1/2	5 1/2
Lead, White, in oil, 25 lb tin pails, add to keg price.....	6 1/2	6 1/2
Lead, White, in oil, 12 1/2 lb tin pails, add to keg price.....	6 1/2	6 1/2
Lead, White, in oil, 1 to 5 gal kegs.....	6 1/2	6 1/2
Lead, Red, bbls. and 1/2 bbls.....	5 1/2	6 1/2
Lead, Red, kegs.....	5 1/2	6 1/2
Litharge, kegs.....	5 1/2	6 1/2
Litharge, bbls. and 1/2 bbls.....	5 1/2	6 1/2

TERMS, &c.—Lead and Litharge.—On lots of 500 lb or over, 60 days' time or 2% discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	1 1/2
Ocher, French Washed.....	1 1/2	2 1/2
Ocher, German Washed.....	1 1/2	3
Ocher, American.....	1 1/2	1 1/2
Orange Mineral, English.....	8 1/2	10
Orange Mineral, French.....	10	10 1/2
Orange Mineral, German.....	8 1/2	9
Orange Mineral, American.....	8 1/2	8 1/2
Paris White, English Cliff stone.....	1.00	1.15
Paris White, American.....	65	75
Red, Indian, English.....	5 1/2	6 1/2
Red, Indian, American.....	2	6 1/2
Red, Turkey.....	9	14
Red, Tuscan.....	9	11
Red, Venetian, American.....	100 lb.....	1.00
Red, Venetian, English.....	1.20	1.35
Sienna, Italian, Burnt and Powder.....	4	5
Sienna, Ital., Burnt Lumps.....	1 1/2	3 1/2
Sienna, Ital., Raw, Powder.....	4 1/2	5 1/2
Sienna, Ital., Raw, Lumps.....	1 1/2	3 1/2
Sienna, American, Raw.....	1 1/2	1 1/2
Sienna, American, Burnt and Powder.....	1 1/2	1 1/2
Talc, French.....	1 1/2	1 1/2
Talc, American.....	1 1/2	1 1/2
Terra Alba, Fr'ch, 100 lb.....	95	1.25
Terra Alba, English.....	70	80
Terra Alba, American No. 1.....	65	75
Terra Alba, American No. 2.....	45	50
Umber, Turkey, Burnt and Powdered.....	3 1/2	4
Umber, Turkey, Bnt. Ln.....	2 1/2	3
Umber, Turkey, Raw and Powdered.....	3 1/2	4
Umber, Turkey, R'w Lumps.....	2 1/2	3
Umber, Turkey, Bnt. Amer.....	1 1/2	1 1/2
Umber, Turkey, R'w Amer.....	1 1/2	1 1/2
Yellow, Chrome.....	10	25
Vermillion, American Lead.....	11	12
Vermillion, Quicks'g, bulk.....	43	44
Vermillion, Quicks'g, bags.....	44	44
Vermillion, Quicksilver sm'r pkgs.....	52	52
Vermillion, English Import.....	80	85
Vermillion, Imitation, Eng.....	8	30
Vermillion, Trieste.....	90	92 1/2
Vermillion, Chinese.....	92 1/2	95
Whiting Common, 100 lb.....	37 1/2	42 1/2
Whiting Gliders.....	45	55

## Colors in Oil—

Black, Drop, Frankfurt.....	25	30
Black, Drop, English.....	12	15
Black, Drop, Domestic.....	7	10
Black, Lampblack, Best.....	20	35
Black, Lampblack, Common.....	7	13
Black, Ivory.....	8	15
Blue, Chinese.....	20	45
Blue, Prussian.....	12	18
Blue, Ultramarine.....	7	12
Brown, Vandyke.....	7	12
Green, Chrome.....	8	13
Green, Paris.....	18	18 1/2
Sienna, Raw.....	7	14
Sienna, Burnt.....	7	14
Umber, Raw.....	7	10
Umber, Burnt.....	7	10

## Putty—

In barrels and 1/2 bbls.....	.013¢	.014¢
In tubs.....	.014¢	.014¢
In tin cans.....	.014¢	.021¢
In bladders.....	.014¢	.021¢

## Spirits Turpentine—

In regular bbls.....	30 1/2
In machine bbls.....	31

## Glue—

Low Grade.....	8	10
Cabinet.....	12	14
Medium White.....	13	15
Extra White.....	17	20
French.....	10	22
English.....	10	15
Irish.....	12	15

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